

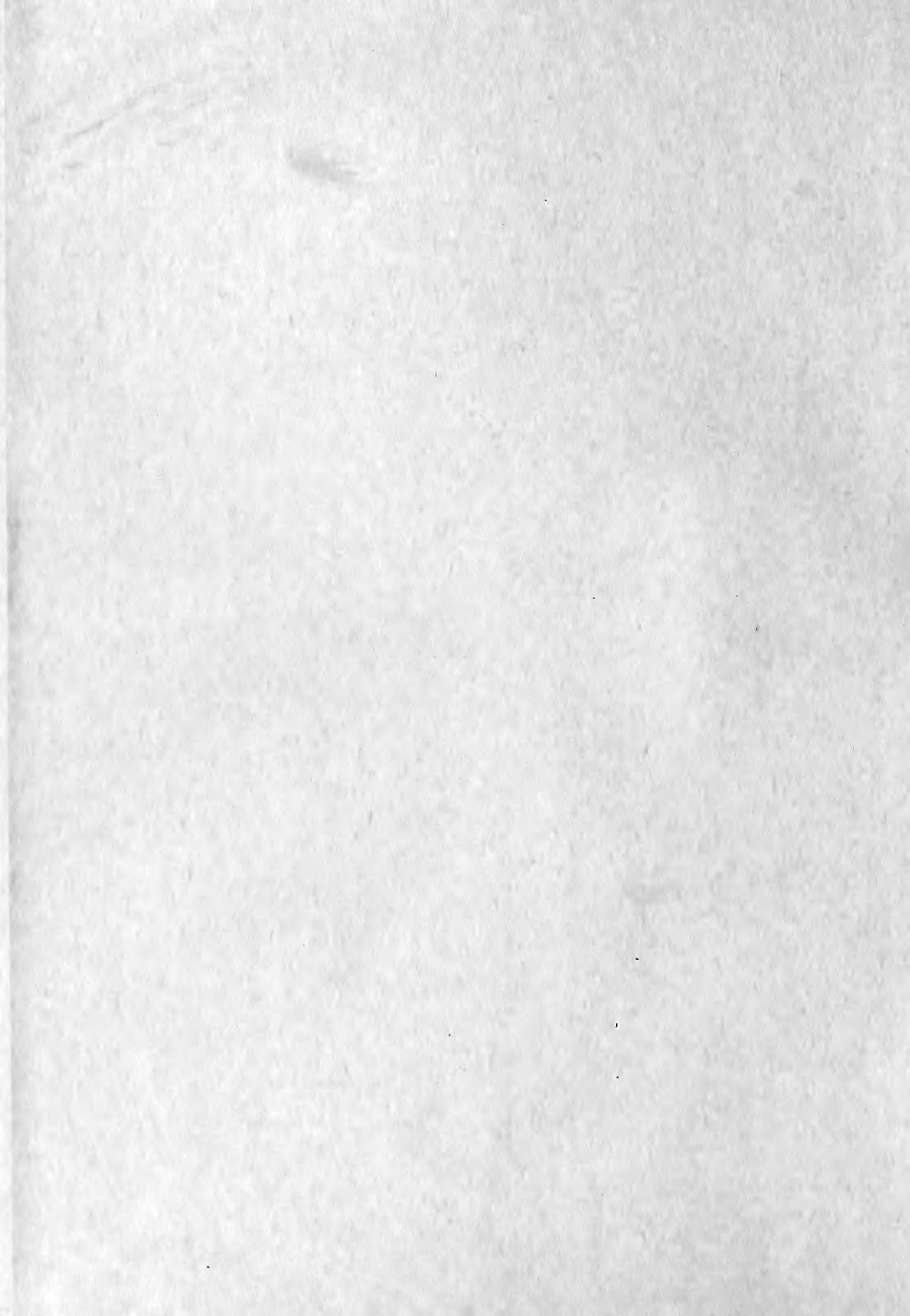
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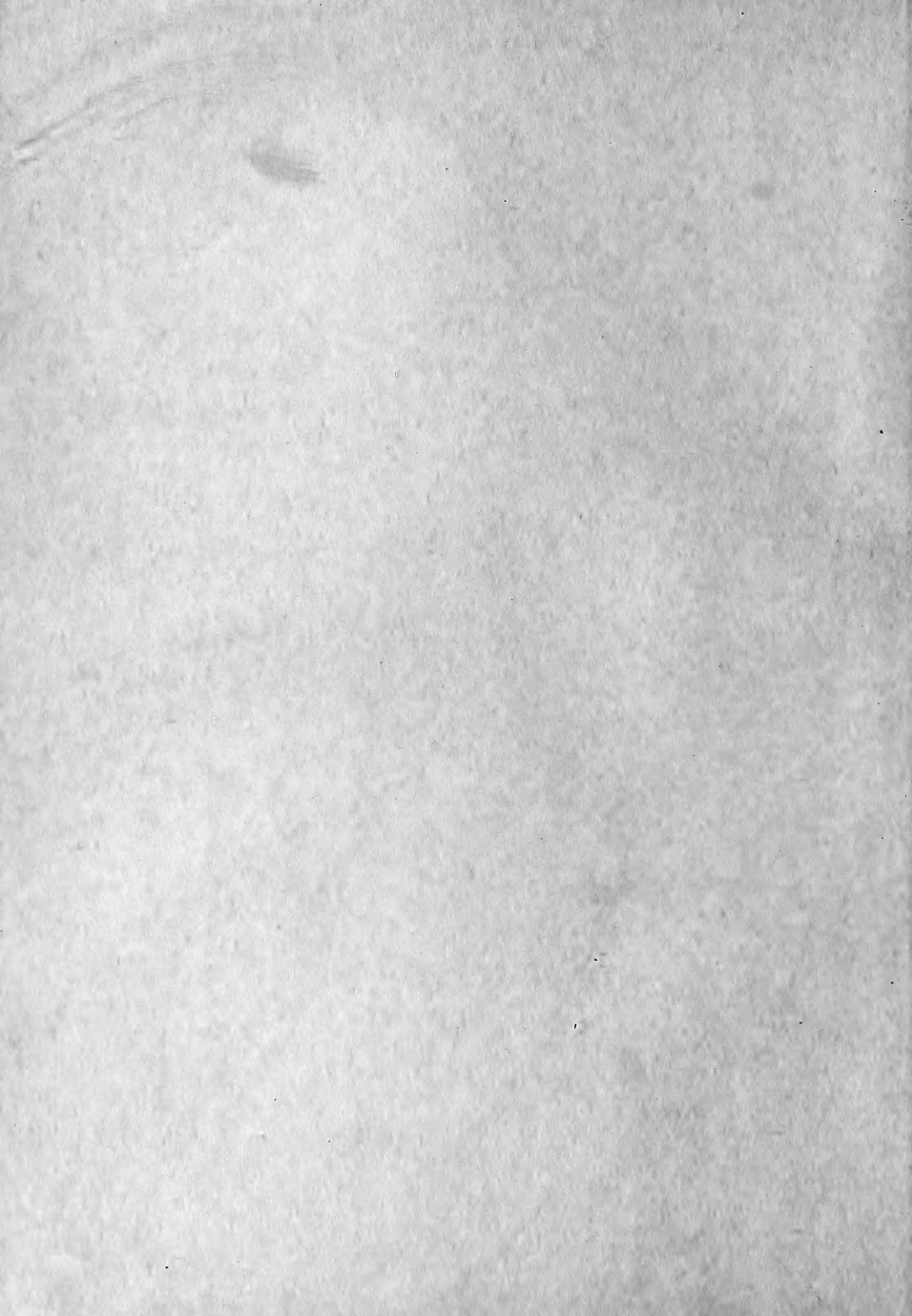
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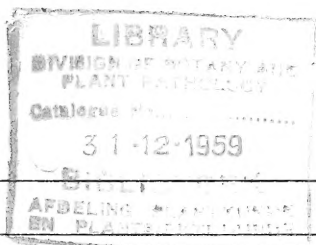


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VOL. V.



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R. H. COMPTON, M.A. (Cantab.), F.R.S.S.Af., Hon. F.R.H.S.

HAROLD PEARSON PROFESSOR OF BOTANY IN THE UNIVERSITY OF CAPE TOWN,
DIRECTOR OF THE NATIONAL BOTANIC GARDENS.

6/15/59

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Vol. 5. 1939.

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VOL. V.

CARL PETER THUNBERG.
AN EARLY INVESTIGATOR OF CAPE BOTANY.

(With Plates 1—5.)

By MIA C. KARSTEN.

INTRODUCTION.

The Swedish botanist, whose name is mentioned heading this article, does not need any introduction to South African botanists, his name being connected—as an authority—to many of the most interesting specimens of the Cape flora, and it lives forth in the genus *Thunbergia*.

CARL PETER THUNBERG, a contemporary of CAROLUS LINNAEUS and LINNAEUS *filius* may be regarded as the most outstanding figure in early Cape botany. It was he who disclosed to a large extent the wealthy vegetation of this southernmost part of Africa to botanists and plantlovers in Europe. Moreover he greatly promoted the study of Cape plants; apart from his own valuable contributions to the knowledge of the vegetation of the Cape Colony, many dissertations on genera of plants indigenous to that country or which are represented there by a great number of species, were written under his direction. In this connection it is most extraordinary to learn that THUNBERG spent only a few years from his long life in South Africa, viz., from April 1772—March 1775.

But is it any wonder that THUNBERG who was not only a very keen and experienced botanist, but an all-round naturalist as well, made the most of his sojourn at the Cape?

A short biographical account,¹ followed by a summary of his travels, may be given first.

¹ Extracted from the Preface of H. O. JUEL, *Plantae Thunbergianæ*. Ein Verzeichnis der von C. P. Thunberg in Südafrika, Indien und Japan gesammelten und der in seinen Schriften beschrieben oder erwähnten Pflanzen, sowie von den Exemplaren derselben, die im Herbarium Thunbergianum in Upsala aufbewahrt sind.—Herausgegeben mit Unterstützung des Vilh. Ekman'schen Universitätsfonds.—Uppsala, 1918.

CARL PETER THUNBERG was born at Jönköping in Sweden in 1743. He studied medicine and natural philosophy under LINNAEUS at the Uppsala University. In 1767 he defended under LINNAEUS' presidency a dissertation entitled "De venis resorbentibus." In 1770 he became a licentiate of medicine, and in 1772, when he was at the Cape, the degree of doctor of medicine was conferred on him. Some years later, in 1777, before he had returned from his journeys to Africa and the far East, he was appointed a demonstrator of botany at the Uppsala University, and in 1781 after his return he was first appointed to be supernumerary professor of botany, and three years later, in 1784, to be professor of medicine and natural philosophy in succession to LINNAEUS the younger. This office he occupied until his death in 1828.

It is learned from this that THUNBERG was a surgeon too; medicine and natural philosophy were still united in one faculty, the separation into two faculties being of later date.

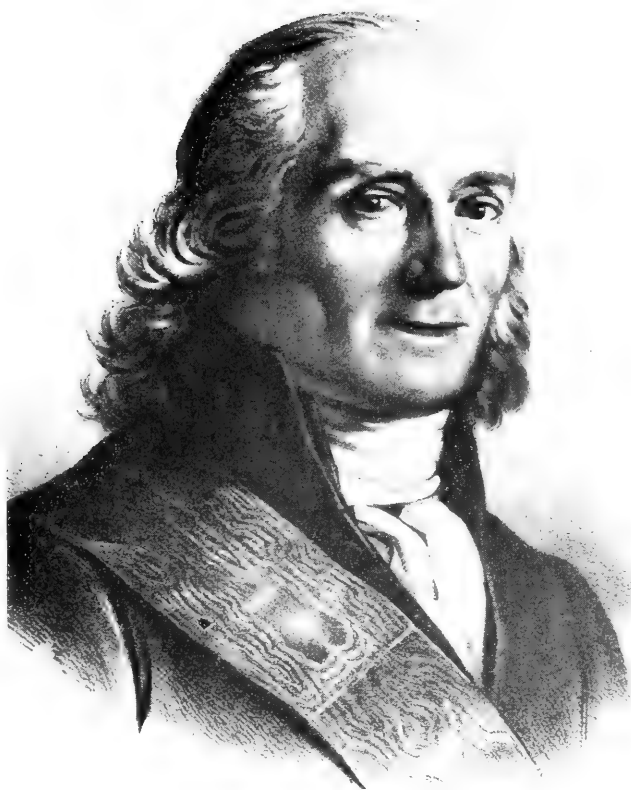
When he was a student, THUNBERG had been awarded the so-called "Kåhres Stipendium," and it is from this stipend-fund that he received in 1770 a sum of 3.300 "daler Kopparmynt" (Swedish currency of that time, copper coins) in order to continue in Paris his studies of medicine and natural history.

When he left Sweden in the autumn of 1770, he could not have dreamt that he would not return to his country until January 1779! On his way to Paris he stayed for some time at Amsterdam, where both the professors BURMAN or BURMANNUS, father and son, gave him a kind reception. The elder, JAN BURMAN, author of the work "Decades Rariorum Africanarum Plantarum," was a personal friend of LINNAEUS, while the younger, NICOLAAS LAURENS BURMAN, had attended the lectures of LINNAEUS at Uppsala in 1760.

Fortune favoured THUNBERG when it put him in contact with these two Amsterdam botanists. As a matter of fact his thorough botanical knowledge had made such a favourable impression upon them, that they offered to afford him an opportunity to sail to the Colonies with a Dutch vessel, in order to collect plants.

After having finished his studies in Paris, he returned to Amsterdam.

Meanwhile it was arranged with some influential people at Amsterdam, that THUNBERG would go to Japan at their expenses with a ship of the East-India Company in order to collect plants for their gardens in that country; Japanese plants were hardly to be found in European gardens at that time. Since foreigners were not allowed to enter the land of the Mikado in those days, with exception of the Dutch, THUNBERG was not only to enter the Dutch service, but also had to appear as a real Dutchman! So it was arranged that first he would spend some years in the Dutch Cape Colony in order to learn the language thoroughly.



Carl Peter Thunberg.

PLATE I.

CARL PETER THUNBERG (signature).
Litho by Cardon from the painting by Per Krafft, D.Y.



1778

ROE UPSAL: HORTI ACADEMICI PRÆF. VERO IMPERIAL
ONSE: CONS: STUCKHELM UPSAL: SOCI: HUIUSQUE 511

PLATE 2.

CAROLUS LINNAEUS (1707-1778).

Print by P. Tanjé from a painting of 1748. State Printroom at Amsterdam.

After having stayed at the Cape for over three years, he sailed for Batavia in March 1775, where he arrived in May. Then he was appointed first surgeon on board a merchantman bound for Japan. He left Batavia at the end of June and landed at Nagasaki early in August 1775. The small island of Decima in the bay of Nagasaki was assigned to the Dutch as their only place of residence. At the beginning THUNBERG's botanical investigations were restricted to this island and it was not until February 1776, that he got permission to botanize in the environment of Nagasaki. Later in the year he made a journey in the Dutch ambassador's suite to the then capital Yeddo. Since they were travelling at slow speed, he was in a position to collect a good number of plants.

After having spent about 16 months in Japan, he sailed back to Batavia at the end of November 1776. He stayed on the island of Java from the beginning of January till the end of June 1777. Needless to say that he spent his time investigating the Javanese flora: he not only collected plants in the neighbourhood of Batavia, but also in other parts of Java.

Then he sailed for Ceylon and arrived at Colombo early in July 1777. A great number of plants were collected in the environs of the town. Towards the end of the year he visited the southern part of the island and in January 1778 he made a botanizing trip to Negambo, a place north of Colombo.

He set out on his homeward journey early in February 1778, and arrived at the Cape about the end of April, but did not stay longer than a fortnight this time.

Finally he reached Amsterdam after a stormy voyage through the English Channel, on which the living plants brought from the Indies were lost.

In December 1778 he paid a short visit to London where he examined BANKS' extensive herbarium. At the end of January 1779 he left England and finally landed in Sweden in March of that year.

We will not expatiate on THUNBERG's merits as an explorer of the flora of Japan or the results of his botanizing trips in other parts of Asia he visited, but will confine ourselves to his activities in the field of Cape botany. In the second part of this article will be found an account of his experiences at the Cape and journeys into the interior of the Colony, taken from his famous work "Travels." His extensive herbarium of Cape plants will also be dealt with separately. At the end of this work a summary of his publications concerning Cape botany will be given.

ACKNOWLEDGMENT.

The author is greatly indebted to the following for their assistance in various ways :—

To Professor ROBERT E. FRIES, Director of the Hortus Bergianus (Bergianska Trädgården) and Secretary of the Royal Academy of Science at Stockholm, for permission to reproduce a manuscript belonging to the Academy, and to study copies of Professor Bergius' letters and various old publications in the Academy's library, moreover for two portraits reproduced with this article and for his kind help in translating the Swedish writings; to Professor NILS E. SVEDELIUS, Director of the Botanical Institute and Garden of Uppsala University, for permission to examine the Thunberg Herbarium; to Mr. CARL G. ALM, Assistant, Botanical Institute at Uppsala, for photographs of some specimens of the Thunberg Herbarium and for a photographic reproduction of a portrait of C. P. Thunberg; to the Librarian of the Kungl. Universitetets Bibliotek "Carolina Rediviva" at Uppsala, for permission to examine the Thunbergian correspondence and to reproduce one of the manuscripts; to the Curator of the Rijksprentenkabinet (State Printroom) at Amsterdam, for permission to reproduce two portraits belonging to its collection; to Dr. A. D. COTTON, Keeper of the Herbarium of the Royal Botanic Gardens, Kew, for permission to examine books in the library; and last, but not least, to Professor R. H. COMPTON, Director of the National Botanic Gardens, Kirstenbosch, and Editor of this paper, for reading over the MSS.

THE THUNBERGIAN CORRESPONDENCE.

Of the greatest interest is THUNBERG's collection of letters that is kept in the library of the Uppsala University (Kungl. Universitetets Bibliotek), because it provides a wealth of information about his life and work, and *inter alia* his botanical activities at the Cape. It is rather a wonderful experience, when examining this collection of manuscripts, to come across letters written by the founder of the vegetable system, the great LINNAEUS, by LINNAEUS *filius*, N. L. BURMAN, JOSEPH BANKS, FRANCIS MASSON and other prominent botanists and plant collectors of those days.

In connection with THUNBERG's journey to the Cape the correspondence from Prof. N. L. BURMAN may be mentioned first.

NICOLAAS LAURENS BURMAN, born at Amsterdam in 1733 and deceased at the same place in 1793, was a son of JAN (or JOHANNES) BURMAN (1707-1779), author of the "Decades Rariorum Africanarum Plantarum," who first was connected as a professor at the botanical garden and later on as a professor of medicine at the Athenaeum Illustre (later to become the university) at Amsterdam.

N. L. BURMAN, a physician by profession, but a very clever and zealous botanist too, was appointed as an assistant of his father in



PLATE 3.

NICOLAAS LAURENS BURMANNUS (1733-1793).
Professor of Botany at Amsterdam.

Litho by N.M.S., belonging to the collection of the State Printroom at
Amsterdam.

1769, and as his successor in 1777. From the botanical works he has left, we may mention first in connection with South African botany his "*Flora indica, accedit series zoophytorum indicorum nec non prodromus Florae Capensis*," Lugd. Bat. (Leyden) 1768. 4to. With 67 plates and containing 1,500 plants from the Indies and a great number from the Cape. BURMAN had got the materials for this publication from his father and from GARCIN. And it is of interest to know that THUNBERG, too, contributed to this work. Further N. L. BURMAN wrote a "*Dissertatio de Heliophila*," a Cape Crucifer (in *Nova acta societatis Upsal.*, Vol. I. 1773). But he made his name as a botanist by his publication of RUMPHIUS' *Herbarium Amboinense* and by his "*Flora of Ceylon*."

As mentioned above, THUNBERG knew both the BURMANS, but it is quite evident he was on more intimate terms with the younger one, N. L. BURMAN, who was more of his age. As a matter of fact he was very good friends with BURMAN *fil.* and his wife (a Juffrouw VERKOLJE by birth), who extended him the greatest hospitality, which stands out most clearly from the letters BURMAN sent to him. The collection of these letters numbers 19, the first one dated March 24, 1771, the last one May 3, 1793 (the year of his death). Nos. 1—6 (incl.) are written in Latin, then we find some Dutch letters—from which it is evident that THUNBERG had got acquainted with the Dutch language in the meantime—and the last two letters are in Latin again.

The first letter, of March 24, 1771, was sent to THUNBERG when he was in Paris in order to complete his botanical studies, the second one, of May 30, 1771, was also forwarded to Paris and deals with THUNBERG's forthcoming journey to Japan as a first surgeon on board a Dutch vessel. The next three letters, of September 21 and December 2, 1772, and August 30, 1773, were all forwarded to the Cape of Good Hope, and No. 6, dated December 8, 1774, was addressed to Texel, apparently to be taken along by somebody setting out for the Cape. In these letters mention is made of the Amsterdam burgomasters TEMMINK and VAN DE POLL and the privy councillor DEUTZ who together with some other gentlemen enabled THUNBERG to undertake this voyage by means of ample endowments (vide "*Travels*" I, p. 313).

In his letter of August 30, 1773, BURMAN writes among other things (in English translation)²:

² Original Latin text: "Optime satisfaceras Directoribus Horti si eistam vivis plantis replatam ad hortum mitteres, interque illas eligeres quae seminibus propagari vix queunt, exgr. Geranium spinosum, flavum, Mesembryanthema, Cactus, Aloes, Similiaque, praecipue ex Succulentis, quae in herbario et ipso horto desiderantur, commendari autem deberent Capitaneo, et a te et a primariis C. B. Spei directoribus.—Addas in super Familiam Bulbosarum Stirpium, ut et Geraniorum, quae rapaceis radicibus sese distinguunt, atque Semina, quae ex rarioribus desumuntur."

" You will greatly satisfy the Directors of the Hortus if you would send to the Hortus a box filled with living plants, and would select among other things those plants which can be propagated by seeds, like *Geranium spinosum*, *flavum*, *Mesembryanthema*, *Cactus*, *Aloes* and similar plants, especially Succulents which are particularly required by the herbarium and the hortus in question, and which must be put under the charge of the Captain, by you as well as by the governors of the Cape of Good Hope.

Kindly add a number of bulbous plants and those species of *Geranium* which are distinguished by their turnip-like roots, and some seeds selected from the rarer specimens".

After this quotation we may proceed to the Dutch part of this correspondence, comprising some letters of particular interest.

The seventh letter of the BURMAN collection, dated October 3, 1778, in which he gives his friend THUNBERG a most cordial welcome at his safe return in Holland from his 8 years' journey to the Cape and the far East, we will reproduce here in full.³

³ Orig. Dutch text :

„WelEdele Hooggeleerde Heer !

Hartelijk verheugt over de tijding van UEds behoude arrivement in Texel, Daer ik UEd met zeer veel deelneemende genoegen meede feliciteere, Dient deezen kortelĳk om UEdG te proponeeren, of UEd ons het plaisier geliefte te doen UEds logement ten onzen huize te neemen, het welk accepteerende is ons verzoek een dag of twee voor UEd aenkomst hier van geïnformeerd te worden, omdat myn Waerde vrouw een kamer en bed voor UEd dan zal in gereedheid doen brengen, daer UEd vry en onverhindert den tijd van UEds verblijf kunt doorbrengen, zullende wy als Broeders te zaemen leeven en den winter zoo aengenaem als mogelyk doorbrengen.

UEds brave en opregte inborst is mij bewust, en dus durve UEd vry toe betrouwen alles wat ik hebbe, dierhalve kunt UEd gebruyk van 't geen ik hebbe zoo van Bibliotheecq als anderzints neemen.

Wij verlangen allen ten vierigsten naer UEd en hoopen UEd in gezondheid te zullen omhelzen betuygende dat ons niets aengenaemer zijn zal als te kunnen betoonen met welken hartelijke deelneeming wij over UEd behouden arrivement verheugt zijn.

Ik noeme mij naer respect verzeekering van ons allen, en hebbe de Eer met alle Achtung en effectae my te noemen.

WelEdele Hooggeleerde Heer

Uw EdEdootmoedige

Dienaer en Vriend

N. L. Burmannus."

Amsterdam

3 October 1778.

Op adreszijde :

Hoog Geleerde Heer

Den Heere Petrus Thunbergh
als eersten Meester zig bevindende
op het geretourneerde Oostindische
Schip T. Loo, leggende in
Texel.

“ Dear and very learned Sir,

I am glad from the bottom of my heart to hear the news of your safe arrival on Texel, upon which I congratulate you with the greatest pleasure. The present letter is to suggest, if you would favour us by taking your residence in our house. In case you accept (our invitation), we beg to be informed of it one or two days before your arrival, in order that my Dear wife will be able to get ready a room and a bed for you, so that you may spend the time of your stay here freely and without constraint. We shall live together as Brothers and pass the Winter as agreeably as possible.

Being fully aware of your honest and sincere character, I venture to entrust you whatever I have ; consequently you may freely use the things I have like the Library, etc.

We are all most anxious to see you and hope to embrace you in the best of health, assuring you that there is nothing that will be more agreeable to us than to be in a position to show you how we rejoice at your safe arrival.

After having assured you of the respect of all of us,

I am,

Your respectful and obedient Friend

N. L. Burmannus.”

Amsterdam,

October 3, 1778.

Addressed to :

The Very learned

Mr. Petrus Thunbergh

First Surgeon on board

the returned East-Indiaman

T. Loo, lying in the roads of

Texel.

Nearly two months later, when THUNBERG was about to leave for England, BURMAN wrote to him :

“ Dear Sir, Very learned Friend !

Here I send you, Dear Friend, my last farewell in Amsterdam.

“ Find enclosed the letters to Messrs. BANKS and MILLER.

November 26, 1778.”

This letter, the eighth of the collection, originally written in the Dutch language, was addressed : “ Aan Thunberg chez Lui.”

Proceeding to the ninth letter (also in Dutch),⁴ dated April 18, 1779 and sent to Uppsala, BURMAN wrote among other things: "... thanks to a great deal of work in my Practice I have been indisposed and rheumatic, and my dear Wife, whose respect and well-intention you may be assured of, is laid up with a miscarriage at present, caused by a (sudden) fright that came upon her without any warning. Thanks to God's goodness my children are getting on quite well, Jantje (little Jan) often speaks of Uncle Thunberg."

From a letter in the Dutch language, of July 21, 1780, and forwarded to Uppsala, we will quote the following notice: "At the moment we have here Mr. PATERSON⁵ of the Cape, who leaves for England next Wednesday and strikes me as a very generous and pleasant man. He has discovered several plants in places where you have not been; he says he will publish them within six months."⁶

The thirteenth letter, sent to Uppsala and bearing date October 22, 1784, contains an acknowledgment for some dissertation THUNBERG had sent and also for a box with Swedish insects, with which his wife had been presented. In a postscript Mrs. A. M. BURMANNUS expresses her best thanks to THUNBERG for sending the insects.

In the fourteenth letter, also written in the Dutch language, dated May 3, 1786, BURMAN informs THUNBERG that together with this letter he will forward under separate cover a great number of Cape and West-Indian seeds "since they were all sent to me without names" ("omdat zij allen zonder naemen mij toegezonden waren"). With regard to these seeds it is pointed out, that they had been sent to him last year (1785), so that they were very fresh. Further BURMAN expresses his thanks for some dissertations he had received from THUNBERG.

The last letter written by N. L. BURMAN we will quote here, is number fifteen, dated July 10, 1786. This was conveyed to Uppsala by the kind offices of a Mr. DE JEAN—whom BURMAN introduced to THUNBERG as

⁴ Orig. Dutch text: "... door zeer veel beezigheden in de Practyq ongesteld en Rheumaticq geweest ... mijn waarde Huysvrouw, die UEd van hunne Agting en welmeenendheid verzeekert, legt teegenswoordig aan een abortus ziek te bedde, veroorzaakt door een schrik, die zonder eenig toedoen HaerE overvallen is, myn kinderen zyn door Gods goedheid vry wel, Jantje spreekt dikwyls van Oome Thunberg."

18 April, 1779.

⁵ W. PATERSON (1755-1810), an officer in the British Army. Served from 1777-1781 in South Africa and from 1781-85 in India. In 1791 he was moved to Australia. He collected plants in S. Africa and in Tasmania and was on very friendly terms with ROBERT BROWN, the well-known botanist.

M.K.

⁶ Orig. Dutch text: "Teegenwoordig is de Heer PATERSON van de Caab hier, die Woensdag naer Engeland vertrekt, en my een zeer genereus en hupsch mensch voorkomt, hij heeft nog verscheiden planten ontdekt op plaetsen daer UEd niet geweest zyt, dien Hy zegt binnen ses maanden uyt te zullen geven."

a man of "clever learning." In this letter BURMAN asks to be informed if there is something new in botany.

When N. L. BURMAN died in 1793 at the age of 60, he left a wife and several children, of which the 5th, named NICOLAAS LAURENS after the father, was born March 6, 1782. He studied law at the Utrecht University and on December 20, 1804 the degree of Doctor of Jurisprudence was conferred on him. He got a job as an inspector of direct taxes at Amsterdam and married in 1812. One day when driving to his country seat at Loenen on the Vecht, nearly 30 kilometers from Amsterdam, his carriage plunged into the water, by which accident he contracted a disease from which he died December 5, 1826.

We have deliberately given this brief biographical account of N. L. BURMAN *filius*, since we have come across a number of letters in the French language, written by him to C. P. THUNBERG, a most remarkable discovery, since it is absolutely unknown that professor N. L. BURMAN had a son who was keenly interested in botany and an enthusiastic collector of plants and moreover a great admirer of THUNBERG, as stands out most clearly from these letters. To a certain extent he followed in his father's and grandfather's footsteps.

The collection of letters by N. L. BURMAN the younger numbers ten ; with a single exception we will not reproduce here the entire letters, but it will suffice to quote fragments of special interest.

In the first letter, dated December 22, 1820, BURMAN *fil.* writes as follows :⁷

⁷ Orig. French text :

Amsterdam,

ce 22 Decembre 1820.

"Vous voudrez bien permettre, Monsieur le Professeur, qu'un amateur de Botanique s'adresse a vous, pour obtenir des renseignemens au sujet d'un de vos Ouvrages. Je prends cette liberté avec d'autant plus de confiance, que j'ai remarqué parmi la correspondance de mon défunt pere avec les Botanistes celebres, une multitude de vos lettres, ou vous marquez constamment le desir d'obliger ma famille.—Ces lettres qui depeignent si bien une grande parti de votre vie si laborieuse et utile aux sciences sont conservés soigneusement, et pourront toujours temoigner de votre merite dans la carriere que vous parcourez si glorieusement.

A la mort de mon pere je n'avais que dix ans, les tems difficiles que depuis cette époque, ma patrie a du endurer, ont influencé sur toutes les fortunes Hollandaises, et singulierement sur celle de ma famille ; je n'ai pu me vouer aux Sciences comme mes Ancetres, et la belle Bibliotheque ainsi que l'Herbier de mon pere ont du être vendues.—Je me suis trouvé engagé dans une carriere assez laborieuse d'un emploié aux Finances ; et seulement a ma 30e année, lorsque je me suis trouvé plus de loisir, le gout de la Botanique s'est developpé chez moi ; alors j'ai taché de joindre l'étude de cette science, aux devoirs de ma charge ; et insensiblement la culture des Plantes et arbustes rares, s'est introduite a une petite campagne que j'ai a moitié chemin d'ici a Utrecht ; et de petit a petit je suis parvenu a entretenir une collection, que je me flatte être choisie.

Les relations que ma famille avait avec Mr. NEETHLING au Cap de bonne Esperance, qui avait reçu son education dans la maison de mon pere, m'a donné occasion d'avoir des bonnes semences de cet endroit ; la necessité de faire un choix de predi-

"Would you kindly allow, Professor, an amateur of Botany to address himself to you in order to get some information regarding one of your works. I take the liberty with still more confidence, since I have noticed among the correspondence of my late Father with famous botanists, a great number of letters written by you, in which you repeatedly express the desire to oblige my relations. These letters which depict so well a great deal of your life, so laborious and useful to the Sciences, are carefully preserved and can always testify to your merits in the career which you have passed through in such a glorious way.

When my father died, I was but 10 years old. The troublesome times which my country has had to endure since that epoch, have affected all Dutch fortunes and in particular that of my relations. I have not been able to devote myself to the Sciences like my Ancestors, and my father's fine Library and Herbarium have had to be sold. I am actually engaged in the laborious career of an inspector of taxes, and it was only in my 30th year, when I found more spare time, that I got a liking for Botany ; I then tried to combine the study of that science with the duties of my profession. Gradually the cultivation of plants and shrubs has been introduced at a small country place that I have half-way from here to Utrecht, and bit by bit I have managed to keep up a collection which I flatter myself to be a choice one. The connections which my relations had with Mr. NEETHLING at the Cape of Good Hope, who had received his education in the house of my father, have given me the opportunity to get good seeds from that place ; the necessity to make a special choice of a particular natural family among the multitude the Botanical world contains, has led me to choose that of the Proteas. I very soon found that I lacked a classical work, viz. your Dissertation *De Protea*, and in spite of the trouble I have taken to obtain this book, I have not been able to do so.

Our booksellers having broken off all correspondence on the subject of Botany, during this period of literary and scientific calamity ; and

lection pour une certaine famille naturelle parmi la multitude que contient le monde Botanique, m'a porté à choisir celle des *Protée's*.—Je me suis dès lors aperçu bien vite, qu'il me manquait un ouvrage classique, votre Dissertation de *Protea*, et non-obstant les peines que je me suis donné pour l'acquérir, je n'y ai pu parvenir.—Nos Libraires ayant rompu toutes les relations de correspondance en matière de Botanique, pendant ce période de calamité littéraire et scientifiques ; et les Bibliothèques Botaniques ayant été éparpillés dans ce laps de tems, je n'ai pu rencontrer aux ventes Publiques, ce que je cherchais. J'ose donc vous prier, Monsieur le Professeur, de bien vouloir m'indiquer, la Librairie en Europe où vous êtes certain que je trouverai vos Oeuvres, car non seulement votre Dissertation susmentionnée, mais aussi vos autres ouvrages, me seront indubitablement nécessaires, au cas que j'augmente, comme il est probable, de tems à autre, ma collection.

Je sens bien que je ne parviendrai qu'à rester un demi savant, ou pour mieux dire Amateur, néanmoins cette aimable science a trop d'attraits, pour que cette considération me puisse décourager."

the Botanical Libraries having been dispersed in this course of time, I have not been able to find on sale what I looked for.

So I take the liberty to beg you, Professor, if you would kindly inform me in what bookshop in Europe you are sure that I could find your Works, and not only your above-mentioned Dissertation, but also your other works which I shall undoubtedly need, in case I add to my collection—as I am likely to do—from time to time.

I am fully aware that I shall only remain a demi-savant or rather an amateur, nevertheless this delightful science has so many attractions that this consideration cannot discourage me.”

In a letter, dated March 22, 1821, N. L. BURMAN *fil.* writes: “With regard to your Commission to obtain for you some skins of Cape quadrupeds, this is rather difficult. Mr. TEMMINK whom I saw after the receipt of your letter, has told me that (already) more than a year ago he wrote on your behalf to the same man, established at the Cape of Good Hope, who is employed by me for my commissions regarding objects of Natural History, but that he had not received any answer.”⁸

In the following letter, dated November 2, 1821, BURMAN informs THUNBERG, after having expressed his thanks for a parcel containing part of THUNBERG’S botanical works, that a certain Mr. BEELDSNIJDER, having his country house near BURMAN’S, had received in that year an important shipment of plants from the Cape, such as different species of *Amaryllis*, *i. a.* *A. gigantea*, *cinnamomea*, *ornata*, *purpurea*, *orientalis*; *Haemanthus ciliaris*, *Tamus Elephantipes*, *Zamia* in several specimens.⁹

Further it is learned from this letter that BURMAN had not forgotten THUNBERG’S commission regarding the skins, for he writes: “. . . and I have sent two requests on this subject by two different ways, so that if one failed, the other (one) might perhaps succeed.”¹⁰ But he had not

⁸ Orig. French text: “Au sujet de votre Commission pour vous procurer des peaux des Quadrupides du Cap elle est assez difficile; Monsieur TEMMINK, a qui j’ai parlé après la reception de votre lettre, m’a dit, en avoir écrit il y a plus d’un an, pour votre intérêt, au même homme que j’emploie pour mes commissions d’objets Histoire Naturelle, établi au Cap de bonne Esperance; mais qu’il n’en avait reçu aucune reponse.”

⁹ *Amaryllis gigantea* (?) = *Brunsvigia gigantea*, Heist. (syn. *B. orientalis*, (L.) Eckl. = *Haemanthus orientalis*, (L.) Thunb.) ?

Amaryllis cinnamomea (?) and *A. ornata* (?). These species we could not trace.

Amaryllis purpurea (?) = *Vallota purpurea*, Herb. ??

Amaryllis orientalis (?) : vide *A. gigantea*.

Haemanthus ciliaris L. = *Buphane ciliaris*, (L.) Herb.

Tamus Elephantipes = *Testudinaria elephantipes*, (l’Hér.) Salisb.

Zamia = different species of *Encephalartos*.

¹⁰ Orig. French text: “. . . et j’ai envoyé des demandes a ce sujet par deux différentes voies, pour que si l’un manquait, l’autre pourrait reussir par hazard.”

yet received any message. This arrived nearly half a year later, for on April 26, 1822 he writes :¹¹

" I have just received from one of my correspondents a rather satisfactory reply, viz. that he undertook to let me have the objects specified below at the price added to each article.

A skin of the common sheep, complete with its parts, the big tail, the teeth and the skull, 10 Cape Rixdalers.

A skin of the Steenbok, complete with its horns and teeth, male and female, 10 Cape Rixdalers *for each specimen*.

A skin of a Duyker, 10 Cape Rixd.

A skin of a Greisbok, 10 Cape Rixd.

A skin of a Rheebok, 25 Cape Rixd.

A skin of a Klipspringer, 25 Cape Rixd.

A skin of a Miereeter or Aardvark, 50 Cape Rixd.

A skin of a Berghaas or Springhaas, 25 Cape Rixd.

A skin of a Zebra, female, 50 Cape Rixd.

¹¹ Orig. French text : " Je viens de recevoir une reponse assez satisfaisante d'un de mes correspondens, savoir, qu'il se faisait fort de m'envoyer les objets ci dessous spécifiés pour le prix ajouté a chaque article.

Une peau de la brebis commune, entiere avec ses parties, la grande queue, les dents et le cranium, pour dix Rixdalers du Cap.

Une peau du Steenbok, entiere, avec les cornes et les dents, male et femelle, pour dix Rixdalers du Cap, *pour chaque individu*.

Une peau d'un Duyker, pour dix Rixd. id.

Une peau d'un Greisbok, pour dix Rixd. id.

Une peau d'un Rheebok, pour vingt cinq Rixd. id.

Une peau d'un Klipspringer pour vingt cinq Rixd. id.

Une peau d'un Miereeter ou Aardvarken, pour cinquante Rixd. id.

Une peau d'un Berghaas ou Springhaas pour vingt cinq Rixd. id.

Une peau d'une Zebra, femelle, pour cinquante Rixd. id.

Une peau d'une Quagga, pour cinquante Rixd. id.

Une peau d'un Strandwolf, pour cinquante Rixd. id.

Une peau d'un Muysbond, pour huit Rixd. id.

Une peau du Giraffe, pour quatre cent Rixd. id.

Mon Correspondent me marque en outre, qu'on ne pourrait pas procurer des peaux du Witte Mol, du Wilde Varken (*Sus Aethiopicus*), du Kaapsche Buffel, du Hippopotame, de l'Elephant, et du Rhinoceros.

A present mon tres honoré Ami, c'est à vous a juger si ces prix vous conviennent, ils me semblent assez moderés si on considere, qu'on doit mettre expressément des Chasseurs en campagne, dans des lieux bien éloignés de la ville du Cap, et qu'apres on doit travailler pour appreter ces peaux.

J'aurais été embarrassé pour vous marquer la valeur du Rixdaler du Cap, si un envoi de raretés botaniques que je viens de recevoir du Cap cette année ne me mettait en état d'en juger—la valeur varie toujours suivant le course, en Janvier de cette année, un Rixdaler du Cap était au pair avec un florin de Hollande. . . . Parmi les objets qui me sont venues du Cap en Janvier dernier, se trouvent quelques bulbes dont je possède des doubles, qui s'ils restent vivantes, peuvent être cédés par moi en cadeau pour le Jardin d'Upsal.—Savoir *Oxalis lanata*, etc., etc. Vous voudrez bien me marquer, si vous en desirez quelque chose, et le plus court chemin pour vous les faire tenir, dès qu'ils seront effeuillés, et par consequent transportables dans une petite caisse. . . . Les *Zamia*'s au contraire continuent a rester d'une très grande rareté, j'ai eu le bonheur de recevoir du Cap un tres grand exemplaire du *Zamia lanuginosa*, qui prospere déjà ; le *Tamus Elephantipes*, qui était excessivement rare il y a deux ans, est devenu assez frequent chez les Amateurs."

A skin of a Quagga, 50 Cape Rixd.

A skin of a Strandwolf, 50 Cape Rixd.

A skin of a Muysbond, 8 Cape Rixd.

A skin of the Giraffe, 400 Cape Rixd.

In addition to this my correspondent informs me that they could not obtain skins of the Witte Mol, the Wilde Varken (*Sus Aethiopicus*), the Kaapsche Buffel (Cape Buffalo), the Hippopotamus, the Elephant and the Rhinoceros.

And now, my very dear Friend, it is for you to judge if these prices will suit you, but they appear to me quite moderate, if one considers that special hunters have to be sent out into the country, in places far away from Cape Town, and that afterwards they must work to dress the skins.

I should not have been in a position to inform you of the value of the Cape Rixdaler, had not a shipment of botanical rarities which I have received from the Cape this very year, enabled me to judge of it. The value always varies in accordance with the market; in January last a Cape Rixdaler was at par with the Dutch guilder."

In the same letter we find some interesting items about a collection of plants imported from the Cape:

" . . . Among the objects which arrived from the Cape in January last, are several bulbs of which I have duplicates which, if they keep alive, may be presented by me to the Bot. Garden at Uppsala.—Viz. *Oxalis lanata*, *Hyacinthus corymbosus*, *Septas capensis*, *Ixia coerulea*, *maculata*, *rosea*, *liliago*, *bulbifera*, *Strumaria filifolia*, *Gladiolus fragrans*, *trimaculatus*, *papilionaceus*, *merianus*, *longiflorus*, *ringens*, *Watsonius*, *Hypoxis stellata*, *juncea*, *Melanthium spicatum*, *uniflorum*, *Antholyza ringens*, *canonia*, *Lachenalia pendula*, *flava*, *pallida*, *orchioides*, *tigrina*, *Iris Pavonia*, *edulis*, *Wachendorfia brevifolia*, *Anthericum alooides*, *nova species*, *Amaryllis revoluta*, *speciosa*, *crispa*, *capensis*, *Ferraria undulata*.¹²

¹² *Oxalis lanata*, Thunb.; *Hyacinthus corymbosus*, L.; *Septas capensis*, L. = *Crassula Septas*, Thunb.; *Ixia coerulea* (I. *corymbosa* β: *caerulea*) = *Lapeyrousia corymbosa*, (L.) Ker.; *I. maculata*, L.; *I. rosea* (Hort. ?); *I. liliago* (?); *I. bulbifera*, L. = *Sparaxis bulbifera* (L.) Ker.; *Strumaria filifolia*, Jacq. = *Hessea filifolia* (Jacq.) Benth. (Amaryll.) ; *Gladiolus fragrans*, variety of *G. plicatus*, Thunb. Diss. Glad. 1784; *G. trimaculatus* (?); *G. papilionaceus* (?); *G. merianus*, (L.) Thunb. = *Watsonia aletroides* (Burm.) Ker.; *G. longiflorus*, L.f. = *Iris paniculata*, Delar.; *G. ringens*, Thunb. Prodr. 1800; *G. Watsonius*, Thunb. = *Antholyza revoluta*, Burm.; *Hypoxis stellata*, (Thunb.) L.f.; *H. juncea* (?); *Melanthium spicatum* (?); *M. uniflorum* (?); *Antholyza ringens*, L. = *Babiana ringens* (L.) Ker.; *A. canonia*, L.; *Lachenalia pendula*, L.; *L. flava* (?); *L. pallida*, Sol. (= ?); *L. orchioides* (L.) Sol.; *L. tigrina* (?); *Iris Pavonia*, L.f. = *Moraea pavonia*, (L.f.) Ker.; *Iris edulis*, L.f. = *Moraea edulis*, (L.f.) Ker.; *Wachendorfia brevifolia* (?); *Anthericum alooides*, L. = *Bulbine alooides*, (L.) Willd.; *A. nova species*; *Amaryllis revoluta* Hort. Kew. = *Crinum lineare*, L.f.; *A. speciosa* = *Crinum speciosum*, L.f. = *Vallota purpurea*, Herb.; *A. crispa* (?); *A. capensis* (?); *Ferraria undulata*, L.

Would you kindly inform me if you wish to receive any (of these bulbs), and let me know the shortest way to forward them to you, as soon as they have lost their leaves and consequently are transportable in a small box.

. . . . The *Zamias* on the contrary still remain extremely scarce ; I have been fortunate enough to receive from the Cape a very big specimen of *Zamia lanuginosa* which is already growing. The *Tamus Elephantipes* that was exceedingly rare two years ago, has become rather frequent among amateurs."

In the next letter, dated June 18, 1822, BURMAN, after having addressed Prof. THUNBERG as his "very dear and honoured Friend" (Monsieur très cher et respectable Ami"), writes as follows¹³ :

"I was very pleased to receive your letter of May 28 last and I hasten to execute your commission to order for you from the Cape the skins of a Quagga, a Steenbok, a Duyker and a Greisbock : it is not at all necessary to pay this commission in advance, and I shall take the liberty to let you know in good time as soon as I shall have received the information that they are on their way. With regard to the Cape bulbs which I intended to send you, I shall not forward them, since you have informed me that they cannot thrive in these northern regions. I will only send them if a cheap and safe opportunity presents itself. However, if I receive some seeds, I shall take the liberty to send them to you."

In a letter dated August 13, 1823, BURMAN writes among other things¹⁴ :
 "... the plants of the Cape of Good Hope which you have discovered and which form the principal ornament of my collection of living Shrubs, are part of the trophies which you have erected yourself. Frequently

¹³ Orig. French text : "J'ai été bien rejoui de recevoir votre lettre du 28 Mai dernier, et me suis empressé d'exécuter votre commission pour faire venir du Cap de bonne esperance les peaux d'un Quagga, d'un Steenbok, d'un Duyker et d'un Greisbock ; Il n'est pas du tout nécessaire de paier cette commission d'avance, et je prendrai la liberté de vous avertir a tems, dèsque j'aurai reçu l'avis qu'ils sont en chemin.—Pour ce que regarde l'envoi des Bulbes du Cap, puisque vous me marquez qu'ils ne peuvent prosperer dans ces regions Septentrionales, je ne les enverrai qu'au cas qu'une occasion peu couteux et sure s'offre ; si cependant je recois des semences, je prendrai la liberté de vous les envoyer."

¹⁴ Orig. French text : "... les plantes du Cap de bonne Esperance que vous avez decouvertes, et qui sont le principal ornement de ma collection d'Arbustes en vie, sont une partie des trophées que vous êtes erigés vous même.—bien souvent quand il s'en developpe une des semences qui m'arrivent du Cap, et qu'en consultant leur histoire, je trouve que vous l'avez decouverte, je me dis, encore un THUNBERG, et je le soigne plus cordialement.

Non seulement que je me propose de honorer par ma plume votre mémoire, en faisant part au Public, des details de votre belle vie, dès que j'aurai rassemblé assez de materiaux ; mais je voudrais si volontiers dès apresent vous temoigner qu'el respect je vous porte personnellement, et je n'ai pu imaginer d'autre preuve, que d'offrir au Jardin Botanique d'Upsal, par respect pour *Carolus Petrus Thunberg* un fort beau *Tamus Elephantipes*, qui m'est arrivé l'année dernière du Cap de Bonne Esperance."

when one of the seeds which reached me from the Cape develops and when consulting its history I find it is you who discovered it, I say to myself 'still another THUNBERG,' and I tend the plant still more affectionately.

Not only do I intend to honour your memory by means of my pen, by informing the public of the details of your splendid life, as soon as I shall have gathered data enough, but also I should very much like to express to you already the respect I have for you personally; and I could not think of a better proof of it than to offer to the Botanical Garden of Uppsala as a token of respect for *Carolus Petrus Thunberg*, a very fine *Tamus Elephantipes*, which reached me from the Cape of Good Hope last year."

Towards the end of the letter we read¹⁵: "Returning to the *Tamus Elephantipes*, would you kindly inform me, in case the Uppsala Botanical Garden accepts my offer, to whom I must address it at Stockholm. Then I will forward the plant with the first vessel sailing for Stockholm next spring."

Over a year later, November 2, 1824, BURMAN writes:¹⁶ "I learn from your letter of October 12 last, that you have duly received the case and the box which I have sent to you through the kind offices of one of my friends. . . . Now that all has arrived safely, I have the honour to inform you that according to what my agent at the Cape of Good Hope wrote to me, the case contained the skins of a *Steenbok*, a *Duiker* and a *Grijsbok*, and that it was sent from the Cape April 8, 1824 by the ship of Captain Schinkel on her homeward journey from Batavia. It arrived at Rotterdam, from where I ordered it to Amsterdam, and on July 23 last I sent it off to Stockholm by the ship *Albertina Amalia*, Capt. P. Green."

Here follows an account of the delivered skins.

Proceeding to his intended present to the Uppsala Botan. Garden

¹⁵ Orig. French text: "Pour revenir au *Tamus Elephantipes*, si le jardin Botanique d'Upsal agréé cette offrande, veuillez me marquer à qui je le dois adresser à Stockholm; alors je l'envairai avec le premier Vaisseau qui partira le printems prochain pour Stockholm."

¹⁶ Orig. French text: "Par votre lettre du 12 Octobre dernier, j'apprends que vous avez reçu en ordre la caisse et la boîte, que je vous ai envoyé par l'intermédiaire d'un de mes amis. . . . Apresent que tout est arrivé à bon port, j'ai l'honneur de vous mander. Que la caisse contenait à ce que m'écrit mon homme d'affaires au Cap de Bonne Esperance, les peaux d'un *Steenbok*, d'un *Duiker*, et d'un *Grijsbok*; et a été expédié du Cap le 8 Avril 1824 par le vaisseau du Capitaine Schinkel de Batavia, et est arrivé à Rotterdam, d'où je l'ai fait venir à Amsterdam, et fait expedier par le Vaisseau *Albertina Amalia* Cap. P. Green, le 23 Juillet dernier pour Stokholm. . . . que j'y ai ajouté dans une boîte un *Tamus Elephantipes*, plante des plus singulières (que vous prenez par erreur pour un espece de Cristal) qui ne deparera pas le Jardin Botanique, si vous voulez la donner cette destination."

BURMAN writes: "... that I have added to this in a box a specimen of *Tamus Elephantipes*, one of the most peculiar plants (which you may mistake for a kind of crystal!) which will not make a bad figure in the Botanical Garden, if you will give the plant this destination." As to its habitat, BURMAN states that it had been discovered in the "Land der Kaffers" (Caffraria).

In the last letter of the series, dated June 17, 1826, mention is made of a plan to publish a number of drawings of Cape plants which BURMAN had been presented with by THUNBERG. However, owing to BURMAN's bad health and untimely death in December of the same year the publication of these plates never materialized, and we do not know what became of them.

This last letter may be reproduced here in full.¹⁷

¹⁷ Orig. French text:

Amsterdam, ce 17 Juin 1826.

"Monsieur et tres honoré Ami!

Depuis le commencement de Decembre de l'année passée, je me suis trouvé gravement atteint d'une maladie de poitrine occasionné par un rhume negligé; qui m'a tenu constamment en suspens entre la vie et la mort; et m'a rendu si faible; que tout travail, et le parler me fut interdit, et l'est encore.—L'Hyver rude que nous avons eu, aggravait constamment le mal, et c'en'est que depuis quelques jours, qu'on peut dire, sous la Grace Divine, qu'on est maitre de la maladie, quoiqu'on me dit, qu'il se passera bien une ou deux années, avant que j'aurai recouvert mes forces precedentes.—Apresent même, dans ces beaux jours, le grand air m'est defendu.

Ceci doit servir d'excuse de ne vous avoir pas repondu plus vite, a votre amiable et interessante lettre du 10 Mars dernier; (je ne pouvais pas tenir la plume) et sert aussi d'explication pourquoi je n'ai pas encore commencé la publication des planches du Cap, deja recues de vous, que j'ai encore la ferme resolution de faire, si Dieu me conserve en vie, après avoir recouvert quelques forces.

Je regrette avec vous, la perte des Bulbes envoiés a Upsal, elles avaient qu'elque prix.—et vous auraient rejoui.

J'attendrai avec plaisir la dissertation de Dracaena. C'est avec le plus grand contentement que j'accepte votre offre de me ceder les 203 pieces de planches peintes de plantes du Japon, pour la valeur de cent florins Hollandais; veuillez avoir la bonté de me les envoyer, et de faire recevoir l'argent.—Je serai bien joyeux de les avoir, et me propose de les publier successivement, au cas que la publication des desseins des plantes du Cap, soit acceuilli avec quelque faveur par le public, dont je ne doute aucunement.—Nul Botaniste, depuis vous, aiant penetré depuis au Japon. Je voudrais aussi que vous fissiez recevoir les 25 Ducats, que vous m'avez écrit de tenir en reserve, pour en paier les peaux des Quadrupedés, attendus du Cap (a moins que vous avez vos raisons particulieres de les laisser entre mes mains) car le Naturaliste que je suis forcé d'y employer, me parait être un trompeur, dont on ne doit attendre rien, qui exige quelque soins et peines.—Qui a la verité fait commerce dans les objets desirés, mais les achete par occasion et les vend au premier venu, sans s'embarasser si les objets sont deja retenu et commandés par d'autres depuis des Années.—J'en ai l'experience en objets de Botanique avec des troncs de *Zamia's*, commandés par moi, cedes par lui a un autre Amateur Hollandais, qui lui avait écrit qu'il donnerait une prime en dessus du prix ordinaire.—Pour la presente année même, mon Cousin NEETHLING m'avait annoncé au nom de ce Naturaliste l'envoi de deux *Zamia's*, et un paquet de semences d'arbustes de Ceylon et du Cap.—Seulement les *Zamia's* me sont parvenus, en état de pourriture, et non les semences, ce que je regrette d'autant plus, puisque je suis privé par la de les partager avec vous, mon tres respecté Ami.

Mon Cousin NEETHLING me mande par cette même lettre du 23 Novembre 1825, —que la premiere peau de Quagga que le Naturaliste pourra obtenir sera pour le Pro.

de tenir en reserve, pour en poier les peaux des Quadrupedes, attendus du Cap, (a moins que vous avez vos raisons particulieres de les laisser entre mes mains) car le Naturaliste que je suis force d'y employer, me parait être un trompeur, dont on ne doit attendre rien, qui exige quelque soins et peines. - Qui a la verité fait commerce dans les objets desirés, mais les achete par occasion et les vend au premier venu, sans s'embarrasser si les objets sont déjà retenus et commandés par d'autres depuis des Années. - J'en ai l'experience en objets de Botanique, avec des troncs de Lamia's, commandés par moi, cédés par lui a un autre Amateur Hollandois, qui lui avait écrit qu'il donnerait une prime en dessus du prix ordinaire. - Pour la presente année même, mon Cousin Neethling m'avait annoncé au nom de ce Naturaliste l'envoi de deux Lamia's, et un paquet de semences d'arbustes de Ceylon, et du Cap. Seulement les Lamia's me sont parvenus, en état de pourriture, et non les semences, ce que je regrette d'autant plus, puisque je suis privé par là de les partager avec vous, mon tres respecté Ami. -

Mon Cousin Neethling me mande par cette même lettre du 23 Novembre 1825. - que la premiere peau de Quagga que le Naturaliste pourra obtenir sera pour le Professeur Thunberg, mais comme je soupçonne il y a peu a compter sur cette promesse.

Je suis confus de votre bonté de vouloir m'envoyer en don, les planches detachées mentionnées dans votre lettre. - Elles me seront bien agréables, d'autant plus qu'il y en auront certainement, qu'il serait dommage de ne pas publier, et de laisser ensevelir dans l'oubli. -

La premiere publication que je ferai, sera dediée a la Société litteraire des sciences a Upsal.

PLATE 4.

Facsimile of N. L. BURMANNUS filius handwriting.

Second page of his letter of June 17, 1826, to C. P. Thunberg.

Original letter belonging to the collection of manuscripts kept in the Library of Uppsala University.

Carl Peter Thunberg utreffer år
 1770 ifrån Uppsala, igenom Danmark och Holland til Paris,
 och förblef derstädes et år.
 1771. om hösten reffe tillbakaus til Amsterdam och med flutet af
 året til Cap & bonne Esperance, dit ankommer, skjedde
 år 1772. Vistandet blef här hela ty år tid och afskillige
 resor, både längre och kortare anställdes til flere inåt
 landet liggande trakter.
 1775 afseglade til Batavia och genast derifrån til Japan, der
 äft varelsen blef 16 månader och under den tiden gjorde
 en resa in åt landet til hufvudstaden Jedo.
 1776. skedde återresan til Batavia. På et halft år tid gjorde
 här flere resor längs Javas östra kust och in åt bergen, -
 tills resan anställdes år
 1777: Julis månad til Ceilon, hvars sjökapten til en hedjadel
 af oen genom reffes, på et halft års tid.
 1778. skjedde resan hemåt til Amsterdam. Flutet af året gjorde
 en resa til Engeland och 1779 igenom Holland och Tyskt,
 land til Sverige.
 På Cap uphäkt ty, utom många nya djur, ~~vidare~~ mer än 1000 nya spen-
 örter, på Japan vid pass 200 och på Ceilon och Javans äfven några
 hundrader spenier.

PLATE 5.

Facsimile of C. P. THUNBERG'S handwriting.

Fragment of a letter with a summary of his travels, which he sent to Pehr Wargentin,
 Royal Secretary, at Stockholm, July 16, 1779.

Original manuscript belonging to the Royal Academy of Sciences at Stockholm.

Amsterdam, June 17, 1826.

“ Sir and very honoured Friend !

Since the beginning of December of last year I have been seriously affected by a chest-disease, caused by a neglected attack of rheumatism, by which I have continually hovered between life and death. This illness has weakened me in such a way that I have been and still am forbidden all work and (even) speaking. The severe winter that we have had, continually aggravated my complaint, and it is only the last few days that one can say that by the Grace of God one has mastered the illness, although I have been told, that it will certainly take one or two years before I shall have regained my former strength.—Even now in this fine weather I am not allowed to go out into the open air.

This must be my excuse for not having answered sooner your charming and interesting letter of March 10 last (I could not hold the pen !) and also as an explanation why I have not yet started the publication of the Cape plates which I had already received from you. But I have the firm intention to publish them if God keeps me alive, after having regained some strength.

Like you I regret the loss of the Bulbs sent to Uppsala ; they were of some value and would have delighted you.

I am looking forward to your Dissertation on *Dracaena*.

It is with the greatest satisfaction that I accept your offer to let me have the 203 coloured plates of plants of Japan, at the price of 100 Dutch guilders. Would you have the goodness to forward them to me and to receive the money. I shall be very pleased to have these plates and I intend to publish them successively, if the publication of the drawings of Cape plants is favourably received by the public, of which I have no doubt.—Since the time you were there, not a single botanist has penetrated into Japan.

I should be glad also if you would accept the 25 Ducats which you wrote to me to hold in reserve, in order to pay with it the skins of the

fesseur Thunberg, mais comme je soupconne il y a peu a compter sur cette promesse.

Je suis confus de votre bonté de vouloir m'envoyer en don, les planches detachées mentionnées dans votre lettre.—Elles me seront bien agréables, d'autant plus qu'il y en auroit certainement, qu'il serait dommage de ne pas publier, et de laisser ensevelir dans l'oubli.—

La premiere publication que je ferai, sera dedié a la Societe litteraire des sciences a Uppsäl.

Le dessin du *Zamia Caffra* me sera agreable, d'autant plus que ce Genre m'interesse, et n'est pas encore bien connu ni decrite.—j'en connais deja une douzaine d'especes bien distinctes, arrivés successivement dans ce Pays, dont la plupart n'ont pas encore de nom spécifique.

Adieu, mon très honoré Ami, continuez a vous bien porter, et a aimer, comme vous respecte

Votre tres humble Serviteur et devoué Ami
N L Burmannus ”

Quadrupeds which are expected (to arrive) from the Cape (unless you have your special reasons to leave this money in my hands), for the Naturalist whom I was forced to employ, appears to me to be a fraud, on whom no reliance can be placed, which causes some care and trouble. He is a man who indeed deals in the desired objects, but who buys them as opportunity arises and sells them to the firstcomer, without troubling whether the objects have already been retained and ordered by other people years ago.—I have had some experience with Botanical objects, viz. some trunks of *Zamia*, which were originally ordered by me, but were sold by him to another Dutch amateur who had written to him that he would give a premium above the ordinary price. This very year my Cousin NEETHLING had informed me in the name of that Naturalist of the sending of two *Zamias* and a packet of seeds of shrubs from Ceylon and the Cape. Only the *Zamias* have reached me, in a decayed condition, but no seeds at all, what I regret the more as I am consequently deprived (of the pleasure) of sharing them with you, my much respected Friend.

My Cousin NEETHLING informed me by the same letter of November 23, 1825, that the first skin of a *Quagga* that the Naturalist would be able to procure, will be intended for Professor Thunberg. But I suspect we can place little reliance upon this promise.

I am rather embarrassed by your kindness in wishing to send to me as a present the detached plates which you mentioned in your letter. I shall be very pleased to have them, and the more so as there will certainly be some which it would be a pity not to publish, and to fall into oblivion.

The first work I shall publish, will be dedicated to the Literary Society of Sciences at Uppsala.

I shall be glad to have the drawing of *Zamia Caffra*,¹⁸ and the more so as I am interested in this Genus, which is not yet sufficiently known, nor described. I know already a dozen distinct species which have successively arrived in this Country, the greater part of them not yet having a specific name.

Farewell, my very honoured Friend, keep well, and remember with affection, as he respects you,

Your very humble Servant and devoted Friend,

N. L. Burmannus.

Among the collection of letters kept in the Library of the Uppsala University we also found some letters THUNBERG had received from the famous Haarlem physicist Dr. MARTINUS VAN MARUM (1750-1837.), one of the most prominent exponents of the natural sciences of those days.

¹⁸ *Zamia Caffra* Thunb. = *Encephalartos caffer* (Thunb.) Miq.

VAN MARUM was the first librarian of the Teyler Foundation at Haarlem and secretary of the "Hollandsche Maatschappij der Wetenschappen". But he was a keen botanist too and a collector of plants which he grew in the garden of his country-seat "Plantlust" near Haarlem.

VAN MARUM's correspondence, in Dutch and in French, numbers 11 letters and programmes of the "Maatschappij der Wetenschappen" (Society of Sciences), the first of these dated May 14, 1792, the last one June, 1806 (programme with a short note). Of special importance for us, since it illustrates VAN MARUM's botanical interests and the value he attached to C. P. THUNBERG's publications in the field of botany (he wanted to buy as many of his botanical dissertations as he could get!), is his letter of June 15, 1795, which we will reproduce here in full. Doubtless the Botanic Garden VAN MARUM talks about in his letter, is the garden of his country-seat "Plantlust."

This letter runs as follows¹⁹:

¹⁹ Orig. Dutch text.

"WelEdele Hoog Geleerde Heer!

Thans verplicht zynde, als Secretaris der Maatschappij alhier, UwEd. het ingeslotene programma toe te zenden, neem ik deze gelegenheid waar om UwEd eenige regels te schrijven. Ruim 2 jaaren geleden of wat langer had UwEd de goedheid mij eenige academische dissertatien toe te zenden, zo veelen als UwEd volgens Uw schrijven (waarbij de dagtekening vergeten is) haar in duplo had, en UwEd had . . . (undecipherable) de goedheid mij toe te zeggen mij jaarlijks Uwe volgende dissertatien te zullen schicken, dan ik heb er sederd geene ontvangen; misschien zijn ze wegens het afsterven van Prof. BURMAN; onder wiens couvert ik ze volgens Uw schrijven verwachte, verdwaald.

Mijne dankzegging voor het gemelde ontfangene pakiet zal U hoop ik echter in 1793 zijn toegekomen.

Zeer aangenaam zoude het mij zijn, gelijk ik toen de vrijheid genomen heb U te melden, indien UwEd mij eene complete collectie van Uwe *Botanische* dissertatien konde doen toe komen; want het is het *Regnum vegetabile* waarvan ik boven andere byzonderlyk mijn werk maak. UwEd heeft mij geschreven dat sommige Botan. dissertatien niet anders als op vendizien te krijgen zijn. Gaarne wil ik ze rijkelyk betalen; en het zal mij gemakkelijc vallen de prijs van dezulken U door een wisseltje te doen restitueren. Van Uwe *Flora capensis*, welke UwEd mij toen schreef in het aanstaande jaar te Berlyn te zullen uitkomen, heb ik nog niet vernomen, gelijk ook niet van Uwe *Prodromus Florae capensis*, noch ook van Uwe *Icones plantarum Japonicarum*, waarvan UwEd. mij schreef 25 icones in een ta . . . (undecipherable), groot folio te zullen uitgeven.

UwEd zoude my verplichten met my van al het Botanische, hetgeen door U wordt uitgegeven, twee exemplaren te zenden; een voor my zelfs en een tweede voor de Teyleriaansche Bibliotheek, die onder mijn directie is; waarvoor ik bij gelegenheid gaarn ook een tweede complete collectie Uwer Botanische dissertatien zoude willen ontvangen. Die geenen welke UwEd voor my gezonden heeft, zijn alleen de *Moraea*, *Restio*, *Ficus* en *Arbor toxicaria Macassariensis*. Gaarn wil ik ook het myne zo veel mooglijk toebrengen om Uwe *icones plantarum Japonicarum* alhier in Holland aan te prijzen en bekend te maeken, terwijl ik zeer wensche dat een ruim debet UwEd instaat mag stellen dit werk te vervolgen.

Sederd eenige jaaren eene Botanische Thuin myne eigene Kosten hebbende aangelegd, om daar in zo veele planten, die de winterkoude alhier verdragen kunnen, als ik verkrijgen kan, te cultiveren; zoude ik gaarn dezelve met veele Noordsche planten, die dus alhier noch ontbreken, verrijkt zien.

"Dear and very learned Sir!

It being my duty as Secretary of the 'Maatschappij' (Society) here to send you the enclosed programme, I avail myself of the opportunity to write you a few lines. Over 2 years ago, maybe somewhat longer, you had the goodness to forward me some academical dissertations, as many as according to your letter (which you forgot to date) you had in duplicate, and moreover you had the kindness to promise to send me yearly your subsequent dissertations. But so far I have not received any; they may have gone astray by the decease of Prof. BURMAN, under whose cover I expected them according to your letter.

I hope my letter of thanks for the received packet mentioned above, will have reached you in 1793.

I should be very pleased, as I took the liberty at the time to inform you, if you could let me have a complete set of your *Botanical* dissertations, for it is the *Regnum vegetabile* of which I make my special study above all. You wrote to me that some Botanical dissertations can only be obtained through a bookseller. I will gladly pay a good price for them and I shall find it easy to refund the amount to you by a bill. I have not yet heard anything of your *Flora capensis*, which as you wrote to me at the time, will be published in Berlin next year²⁰, nor of your *Prodromus Florae capensis*, nor of your *Icones plantarum Japonicarum*, of which you intend to publish, as you wrote to me, 25 icones in one (undecipherable) royal folio.

I should be obliged if you would send me two copies of all your Botanical publications, one for myself, a second for the Teylerian Library, which is under my direction, and for which library I should like to receive occasionally another complete set of your Botanical dissertations. The publications you sent to me, are only those on *Moraea*, *Restio*, *Ficus* and *Arbor toxicaria Macassariensis*. I will gladly do my best to recommend and announce here in Holland your *Icones Plantarum Japonicarum*,

Zoude UwEd genegen zijn my van dezelve, zo ver dit onder Uw bereik is, de zaaden voor het aanstaande jaar te doen toekomen; dan zal ik UwEd een lijstje zenden van het geene wy hier hebben waaruit dus blyken kan, wat my aangenaam zoude zijn. Ik ben misschien hier te Haarlem waar de cultuur van Exotica onder de Fleuristen meer en meer toeneemt, in de gelegenheid van UwEd voor den Hortus van Upsal van eenige dienst zijn; want schoon ik alleen planten op de kouden grond cultiveer, heb ik echter wel gelegenheid de zaaden van andere planten voor UwEd te bekomen; gelyk ik ook gaarn mynen dienst aanbiede, waar ik UwEd hier van enig nut zoude kunnen zijn, terwijl ik met waare hoogachting

Verblyve

UwEds toegenegene
M. v. Marum."

Haarlem,
15 Junij, 1795.

²⁰ The Berlin edition of Thunberg's *Flora Capensis* never appeared, but the work was finally printed at Uppsala in a simplified form, without plates.

at the same time expressing the wish that a ready sale will enable you to continue this work.

Having for some years laid out a Botanical Garden at my own expense, in order to grow there as many plants which can stand the winter-cold as I can get, I should like to have it enriched with many northern plants which are still missing.

Would you feel like sending me the seeds of those plants, as far as lies in your power, for the next year? Then I will let you have a list of what we have here, from which you will see what would please me. I might be in a position here at Haarlem where the cultivation of Exotica is increasing more and more under the Florists, to be of some use to you for the Hortus at Uppsala. Although I only grow plants in the open ground, I am in a position to obtain for you some seeds of other plants, and I should be pleased to offer my services if I can be of any use to you.

I remain with true esteem

Yours affectionately

Haarlem,

M. v. Marum."

June 15, 1795.

We may add that VAN MARUM was also in correspondence with HAWORTH, BANKS, REINWARDT, WILLDENOW, SALM-DYCK, PERSOON. Among the collection of manuscripts kept in the library of the "Hollandsche Maatschappij der Wetenschappen" at Haarlem are many letters written to him by C. G. C. REINWARDT²¹ and SALM-DYCK, and also some letters by C. P. THUNBERG from the Cape of Good Hope.

Our examination of the Thunbergian correspondence in the library of the Uppsala University also revealed some letters from three British botanists, viz. MASSON, BANKS and SALISBURY.

FRANCIS MASSON (1741-1805)²² was born at Aberdeen and became a gardener by profession. Later he went to London and was appointed as an under-gardener at the Royal Botanic Gardens at Kew, which were under the direction of WILLIAM AITON at that time.

In the beginning of 1772 MASSON was sent out to the Cape by order of His Majesty, to collect seeds and plants for the Royal Gardens, at the suggestion of Sir JOSEPH BANKS who had landed at the Cape the previous year. MASSON remained at the Cape for two years and a half, during which time he undertook three journeys into the interior of the Colony. On his first journey (Dec. 10, 1772—January 18, 1773) he was accompanied by the Swede FRANZ PEHR OLDENBURG, of whom we know that he col-

²¹ Vide : *Journal of the Botanical Society of S. Africa*, Vol. XXIII, 1937, pp. 18-22, "Letters from an early Cape Botanist," by M. KARSTEN.

²² From an article on F. Masson by JAMES BRITTEN, F.L.S., in *Journal of Botany*, Vol. XXII, London, 1884.

lected (in 1772) about 1,000 specimens of Cape plants which were obtained by BANKS and are now kept in the Herbarium of the British Museum (South Kensington). OLDENBURG was a soldier, but had been practising botany for the space of two years.

His second journey into the interior (September 11, 1773—January 29, 1774) MASSON undertook together with C. P. THUNBERG, and it is quite evident that also on his third journey he was in the company of THUNBERG, though he does not state this in his report. But he wrote to LINNAEUS that he had made "two very successful journeys with the ingenious Dr. Thunberg." On p. 6 of his "*Flora Capensis*" THUNBERG writes of MASSON: "Annis 1773 et 1774 mecum interiora africes versus orientem et septentrionem peragravit." (In 1773 and 1774 he traversed with me the interior of Africa towards the east and the north").

On May 19, 1776, MASSON left England for the second time and after a lot of travelling about—he visited Madeira, the Canaries, the West-Indian Isles, etc.—he arrived at the Cape again on January 10, 1786, where he remained until 1795, when he returned once more to England, taking his residence at Kensington. In that time he worked at his "*Stapeliae Novae*," which was published in 1796. As a matter of fact the *Stapelias* were his favourites; many new species were discovered by him on his botanical peregrinations in the Cape Colony.

In his correspondence with Sir JOSEPH BANKS he shows himself as an interested botanist and a zealous collector. But according to a letter BANKS wrote to him, his long and expensive journeys into the interior of the Colony were not fully appreciated at home. In his anxiety for travelling and exploring he did not always take notice of the instructions of his principals. In one of his letters to THUNBERG reproduced below, MASSON frankly admits he broke through his orders in this respect.

From letters he wrote to BANKS it is learned that the Dutch Government put obstacles in his way with regard to his excursions into the interior, and it was only with the greatest difficulty he got the necessary permission.

MASSON added many specimens of Cape plants to the Banksian herbarium and left a considerable collection of drawings which partly belonged to BANKS.

There are three letters from MASSON at Uppsala.

Sir JOSEPH BANKS (1743-1820) may be regarded as one of the most outstanding botanists and collectors of that epoch. He promoted the botanical investigation of far-off parts of the world and collected an extensive herbarium. Ample means enabled him to add to his collections continually. So he purchased the famous herbaria of PAUL HERMANN

(1640-1695), professor of botany at the Leyden University, who made a journey to Ceylon with the usual landing at the Cape, and CLIFFORD (1685-1760), a wealthy director of the East-India Company, who possessed a marvellous collection of plants in the garden of his country-seat "De Hartekamp" at Bennebroek near Haarlem. LINNÆUS, who was his guest for some years, has described in an illustrated work, the "*Hortus Cliffortianus*," the plants of that garden.

With his librarian, SOLANDER, BANKS took part in the first voyage round the world of Captain JAMES COOK on the "*Endeavour*" (1768-71).

BANKS was one of the founders of the Linnean Society of London.

As to THUNBERG's connections with BANKS, it has been already stated in the preface that when he was in London in 1778, he examined the Banksian herbarium. And it is beyond doubt that he made the personal acquaintance of Sir Joseph on that occasion.

R. A. SALISBURY (1761-1829), a botanist and one of the founders of the Royal Horticultural Society, made a special study of the genus *Erica*. His name is connected as an authority with several of our Cape species.

BANKS and SALISBURY are represented in the Uppsala library by one letter each.

First letter from Masson.

Cape of Good Hope 21st March 1793.

Much esteemed Friend

After so many years Shameful neglect of a friend to whom I ow so many obligations, for which I can make no apology ; I take the liberty to address you from the Southern extreemity of Barbarous Africa where I suppose you are not ignorant of my long station. The sol intention of my second visit to the Cape being to furnish the Royal Garden at *Kew* with living Plants and as the mountains in the southern parts abound more with beautiful Frutices than the dry parched mountains of the interior parts I had orders to confine my investigation chiefly to them. I however broke through my orders and made one Journey to the Namaqua Land and another to the Kleijn Roggeveld & Zwarte berg which proved productive of many beautiful plants. The rest of my time has been employed exploreing the Mountains of Hottentot Holland, French Hoek, Roede Zant, Rivier Zonder Eijnde.

Altho' our former collections of Cape plants was very numerous and compleat yet I think I have discovered some new Genera and added several new Species to the old. To the Genera *Erica*, *Protea*, *Amaryllis*, *Haemanthus* I have added Several new Species. of the Genus *Massonia* I have discovered four new Species, of the Genus *Stapelia* I have dis-

covered more than twenty new Species I have mad figures of most of them and intends to give a Monography of them when I return to England.

To Insects & Fishes I have made a prety good collection but of the other parts of Natural history I have don nothing.

We have had here for some years a Collector from the Emperor of Germany but he has been very unfortunat in loosing so many Masters. Several French Botanists has been here *en passant* one very recent a Mr. Aubert who has been on the Island of *Tristan d' Cunha* and made a curious collection. (He favoured me with a few Sps.) it is curious to observe that they seem to pertake of both continents viz. Africa & America. I observed some phylica but no Erica or Protea.

Most of your old Friends are still alive. Mr. DE WITT of Roede Zant. THUNNIS Zoete Milk valleij, Juffrouw DE KOK Zee koe Rivier. with many others.—Colonel GORDON often mentions you with respect and intends writing to you but at presents is to much employed in Political Affairs.

I have delivered to our Friend Mr. BRATT a Box containing Insects and a packet containing Plants which he promises to forward to your Correspondent in Holland if any Swedish Ship touches here I shall writ you more particularly

I am dear Sir withe the greatest esteem
Your very humble Servant

Frans. Masson.

Chevalier Thunberg.

Second letter from Masson.

Addressed to :

Monsieur Charles Pierre Thunberg
Chevalier e Professeur de Botanique
à Upsal
en Swede.

Cape of Good Hope 15th May 1793.

My dear friend,

Some months past I did myself the honor to writ you a letter with a box of Insects and a few Specimens of Plants which I thought would be acceptable to you. I delivered it to you correspondent Mr. BRATT to forward it ; but in the present State of affairs in Holland he thought it best to deliver it to a Swedish India Ship bound to China it will be long in coming but will be safer as we hear that France has declared war against that Republic. I have a small collection of beautiful exemplars of plants of Botany Bay which I wish to send to you but for the same reason I deferre it to another opportunity.

My long residence at the Cape enabled me to make some new Botanical discoveries ; altho' my Journies has not been So far as when we travelled together ; my farthest Journey has been only to the Camies Berg. I have discovered many N:Sp: of Staplia near thirty Sps. many N:Species of Amaryllis, Haemanthus, Massonia Albuca etc. I think now to make another Journey into that country, which will finish my perigrinations here when I think of returning home, and Shall be happy to communicat every thing that may be worth your notice.

I have a good collection of Insects. I have found a red *Blossop*. but have only one Specimen.

I am dear Sir with the greatest
Esteem yours

Francis Masson.

Many of your old friends
still exist and have often
enquired for you viz.
DE WITT of Rode Zant
THUNNIS Zoet Melk Valeij
AUGE is yet alive but live
far in the country.

Third letter from Masson.

Addressed to :

Charles Peter Thunberg
M.D.

Knight of the Order of Vasa. Professor
of Botany at
Upsal.

London Nov. 29 1795.

My dear Friend,

I have the pleasure to inform you of my safe arrival here about 4 months ago. I have also had the pleasure to receive your obliging letter dated October 14th 1794 accompanying your prodromus for which I return you many thanks. I left the cape Good Hope 17th of last March. with a collection of growing Plants which I have been so fortunate to bring Safe home. all my Stapelei (about 30 Spec.) are now growing in Kew Garden. Many of your old friends are yet alive at the Cape. viz. THUNES & his wife. old DE WITT of Roode Zant etc. but the whole colony has for some years been falling in decadence and at last almost General State Bankruptcy. having nothing but wretched papper money. It is now fallen into the hands of the English whether they will recover

its credite or whether it will remain long in their hands is difficult to Say.

Last year I did my self the pleasure of writing to you & sent a small collection of plants, which Mr. BRATT forwarded by a Dutch ship but I fear that they have fallen into the Hands of their enemies and consequently lost. If there is any plants or insects which I can send to you let me know.

Excuse this short Epistle an believe dear Sir
with the greatest respects
y Servat
Franc Masson

The direction to Mr. MASSON is :

Mr. Francis Masson.
at Mr. Baren's palace gate
Kensington.
(or the letter may be directed to
him at Sir Joseph Banks's K.B.
Soho square.)

Letter from R. A. Salisbury, dated April 29, 1796.

" Professor THUNBERG is requested to send a very small specimen, (a single flower or two with a few leaves will generally be sufficient) of each of the following species of *Erica* described in his *Dissertatio de Erica*. It may happen, that even these cannot always be taken from the original specimen without injuring it too much : if so, could either the specimen itself or a duplicate be risqued sending to London, they should be returned by the first safe conveyance. Any observations Professor THUNBERG has to communicate on any of the *Ericas* in his work, will be faithfully acknowledged, & if he has taken up any of the following species on LINNÉ'S authority solely, or other authors, will he have the goodness to signify as much ? the plants with a Dash — under the name (here printed in italics, M.K.) are particularly wanted.

<i>Tenuifolia</i>	<i>Coccinea</i>	<i>Pilulifera</i> .
<i>Bracteata</i>	<i>Grandiflora</i>	<i>Inflata</i>
<i>Axillaris</i>	<i>Cylindrica</i>	<i>Abietina</i>
<i>Imbricata</i>	<i>Curviflora</i>	<i>Mammosa</i>
<i>Melanthera</i>	<i>Tubiflora</i>	<i>Empetrifolia</i>
<i>Leucanthera</i>	<i>Glandulosa</i>	<i>Gnaphalodes</i>
<i>Spumosa</i>	<i>Cerinthoides</i> β	<i>Mucosa</i>
<i>Capitata</i>	γ	<i>Corifolia</i>
<i>Totta</i>	<i>Dentata</i>	<i>Calycina</i>

Virgata	Comosa	Scoparia
α	Racemosa	Formosa
β	Halicacaba	Rubens
γ	Regerminans	Incarnata
δ	Hirta	Ramentacea
Hispidā	Bicolor	Cernua
Petiverii α	Pubescens	
β		
Plukenetii	1. Pilosa	
Cephalotes	2. Hispida	
Pulchella	3. Villosa	
Pinea	4. Parviflora	
	Cubica	
	Tesselata	
	Arborea	
	Horida	

of the large flowered specimens a single flower & leaf will answer every purpose wanted. Of the smaller flowers a very little branch is requested—each put up in a separate small piece of paper.”

At the back of SALISBURY'S letter Sir JOSEPH BANKS writes as follows :

“ My dear Sir,

I take the spare paper my friend Mr. SALISBURY has left to solicit your attention to his Request. his Botanic Garden which is cultivated at a considerable expense is next in Point of Value to that of Kew & he is not only diligent but well instructed as a botanist. he Promises if he can get Specimens from you & from SWARTZ to whom he has written that he will give a monographia upon Ericas with good figures & he has both zeal to induce him to undertake & money to enable him perform this difficult task I entreat you therefore for the advancement of Science to spare as much as you can for him.”

(To be continued.)

THE CAPE SPECIES OF *TRIGLOCHIN*.

By R. S. ADAMSON.

There exists some degree of uncertainty in the determinations of the material of *Triglochin* from South Africa. Four distinct species are found but these have been placed in herbaria under a variety of names. Of these species *T. striatum*, Ruiz. and Pav., which has short fruits, is very distinct and presents no difficulties. It is among the long fruited forms that confusion has occurred. Two species, *T. bulbosum* L., and *T. laxiflorum*, Guss. were described by A. Bennett in *Flora Capensis* (VII. 42. 1897); a third, *T. elongatum*, was described later by Fr. Buchenau (*Das Pflanzenr.* IV. 14.10. fig. 3. 1903) from specimens collected at Malmesbury and in Pondoland.

T. elongatum, Buch. is distinguished by the possession of a creeping underground stem but no tubers. Material collected at Muizenberg that agreed with the description of this species was sent to Berlin for comparison with the type specimens (Bachmann, 1693) and Professor Markgraf reports that there is complete agreement.

T. elongatum has a thin underground stem, 15—20 cm. or more below the surface. This bears erect aerial stems up to 40 cm. in height which are slightly thickened in the lower portions, the diameter being 4—5 mm. instead of 2 mm. These thicker lower parts are surrounded by leaf sheaths that break down into soft pale coloured fibres. The leaves are erect. The spike is long and crowded, with the fruits more or less secund. The fruits are erect, longer than their peduncles, slightly emarginate at the base, and a little narrowed at the top. The stigmas are small with short hairs on the upper surface.

Most of the material referable to this species that exists in herbaria has the erect stem only and is without the thin rhizome. The species appears to be not uncommon in marshy places at low altitudes and especially near the sea. It appears to favour brackish soils and has not been found inland. It flowers in October and November. The following belong to this species :—

Cape Peninsula : Lakeside and Muizenberg, Adamson 790, 1365, 1370, 1372-3, 1614, L. Bolus, M. R. Michell, Schlechter (Bolus Herb. 7148) ; Wolley-Dod 3658 ; Paarden Is, Adamson 843, Dümmer 1282 ; Cape Flats, Rehmann 1282.

Uitenhage : Ecklon and Zeyher 620 ; Cape Recife, Ecklon and Zeyher. Kentani, Pegler 335 ; Durban, Wood 396, 425. Without locality, Zeyher (as *T. maritimum*).

Of the tuberous forms, *T. laxiflorum* Guss. is a critical species which some authors have regarded as a state of *T. bulbosum* (cf. Buchenau l.c.). Careful examination of material from southern Europe and northern Africa shows that the plant generally separated under this name is small, with a bulb-like tuber surrounded by rather soft fibres, a lax spike with ascending fruits on short stalks, the fruits being widest at the base. No plants from South Africa have been seen which really agree with these and it seems that *T. laxiflorum* must be omitted from our flora.

The South African material grouped under *T. bulbosum* undoubtedly includes two distinct species. Very much the commoner is a plant of marshy places with a swollen tuber which is wider than long and blunted. The tuber is surrounded by dark coloured, hard, rather woody fibres. The spike is rather lax with spreading fruits, which are slightly narrowed at the base, distinctly so at the top. The stigmas are large and covered by longish hairs. This is *T. bulbosum* L. (*T. Barrelieri* Lois.), a plant with a wide distribution. It has been found in several inland stations in South Africa though commoner near the coast. *T. bulbosum* shows a great range of variation in size.

The second plant which has often been united with this is a much more slender one found growing in shelter on mountain slopes but not in marshes. This is distinguished by the pale green colour, small fusiform tubers which often occur in groups and are surrounded by a brown fibrous sheath, the very slender spreading flexible leaves, few-flowered spikes, and fruits narrowed at both ends on long stalks. The stigmas are smaller than those of *T. bulbosum* and with much shorter hairs but are larger than those of *T. elongatum*. This is an undescribed species :—

T. tenuifolium, Adamson sp. nov. Herba scaposa, debilis, tuberosa, tuberis pluribus fusiformibus, 1·5—2 cm. longis, 1 cm. latis, vaginis fuscis fibrosis obtectis. Folia laevia, tenuissima, elongata, subflaccida. Inflorescentia suberecta, laxa, pauciflora, foliis brevior, pedicellis divaricatis fructum aequantibus vel paullo superantibus. Fructus apice basique cuneatus, stigmatibus divaricatis pilis brevibus tectis.

Sheltered places among bushes on mountain slopes up to 1,200 ft., mostly on granite soils. Fl. Oct.—Nov. Cape Peninsula and surrounding districts. Does not inhabit marshes.

Cape Peninsula :—Table Mt. west side, Adamson 986 (type in Bolus Herb.)

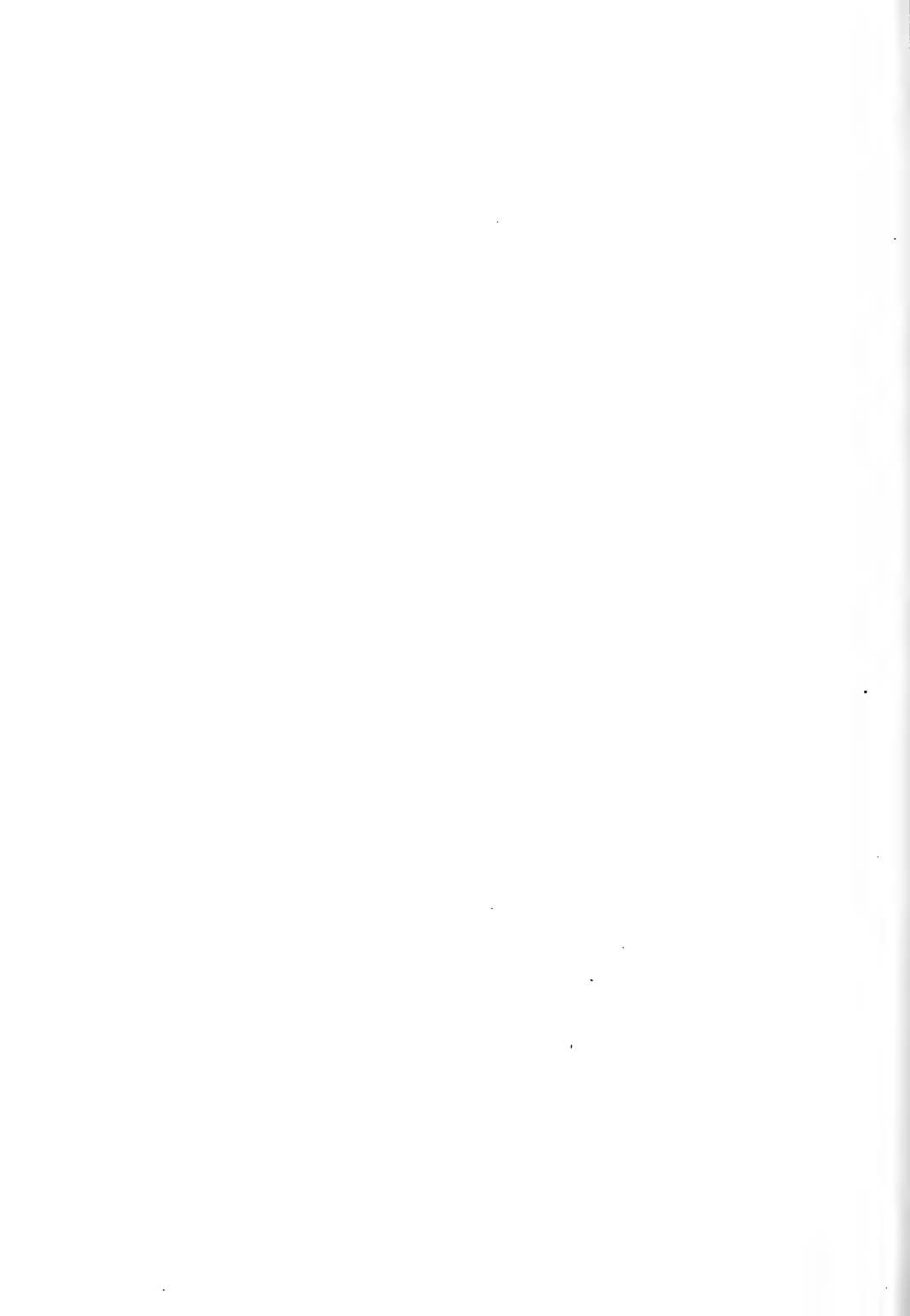
M. R. Michell ; Stinkwater, Rehmann 1194 ; Kloof Nek, L. J. Scott ; Sea Point, Wilms 3644, 3645 ; Lion's Head, Wolley-Dod 2915 ; Cape Town, Schlechter 1540 ; Klaasenbosch, Wolley-Dod

2918 ; Muizenberg, Dümmer 1050 ; Simonstown, Baviaans Kloof, Salter 344 /10.

Caledon, Purcell 128.

Leaves 14—15 cm. long very slender 1 mm. wide. Spikes up to 14 cm. Pedicels 8—12 mm., fruits 7—8 mm. Whole plant yellowish green.

Buchenau (1 c.) places the South African plant of *T. striatum* under var. *montevidense*, Buch. which is characterised by the relatively large size, broad leaves, and long ligules. The variety is not a very distinct one and does not appear worthy of maintaining.



TWO ILLECEBRACEAE FROM THE CAPE
PENINSULA

By R. S. ADAMSON.

HERNIARIA.

A single species of this genus has been found on the Cape Peninsula. This is a rather large plant for the genus with a prostrate somewhat woody stem with long internodes. The leaves are a yellowish green and both leaves and flowers are covered with short hairs. The flowers have long styles, as long as the ovary, at the flowering stage, with a small minutely bifid stigma at the top.

This plant has been identified with *H. hirsuta* L. which is the only species recorded for South Africa in Flora Capensis (I. 48. 1859 : V.i. 400. 1910.) but the identification is certainly not correct. At least two species of this genus have been found in the country neither of which agrees with *H. hirsuta*. The prostrate woody plant seems confined to sand near the coast or at low altitudes on the Peninsula and adjacent parts of the south west corner of the country. From several inland stations another species has been recorded which is quite different. This latter species is identical with or very closely allied to *H. cinerea* DC. This has not been found on the Cape Peninsula.

The prostrate sand-loving plant appears to be indigenous. It occurs in vegetation that seems quite untouched and where there are certainly no traces of the presence of aliens. It is an easily recognised plant and was collected by several of the older collectors, e.g. Pappe, Harvey, Ecklon and Zeyher. In herbaria some of the older specimens are labelled "*H. capensis*." This species was created by Bartling (Linnaea VII. 624. 1832) and based on specimens collected by Zeyher at Caledon Baths. The short description says:—"*herbacea tenuissime pubescens ramis adscendentibus*" which does not seem at all applicable to a plant of which the most obvious characters are the woody stem and completely prostrate habit. It would be more applicable to the inland plant, an identification which is supported from the station of the type gathering. Bartling's species was taken from the earlier *H. incana* var. *capensis* cf Persoon (Syn. Pl. I. 292. 1805) the short description of which might apply to this plant. The style character however completely excludes association

with *H. incana*. The plant appears to be an undescribed one and is named *H. arenicola* on account of its very characteristic habitat.

H. arenicola Adamson, spec. nov.

Perennis, prostrata, luteo-viridis. Caulis 20—50 cm., teres, subglabrous, purpureus, internodiis longis foliis multo longioribus, pilis brevibus hirsutus. Folia alterna, 4—5 × 2 mm., sessilia, ovata, cuneata, apice acuta vel subobtusata, pilis brevibus tecta, stipulis membranaceis albis acutis, marginibus ciliatis, foliis multo brevioribus. Flores axillares, 3—5 in ramis lateralibus brevibus aggregatae. Tepala pilis brevibus hirsuta sine pilis longis vel hispidis. Stylus erectus ovarium subaequans, apice minute bifidus.

Sand at low altitudes, especially dune hollows near the coast. Cape Peninsula and south west coasts. Fl. Oct.—Dec. Type in Bolus Herbarium.

Without precise locality:—Zeyher 4863; Harvey 503; Cape: Muizenberg, Adamson 1242 (type); Schlechter 1488; Ecklon 204; Levyns. Fish Hoek, Wolley-Dod 3590. Chapmans Bay, Salter 7092. Karbonkelberg, Levyns. Green Point, Zeyher. Red Hill, Salter 310/12. "Cape Dunes," Pappé. Bredasdorp: Cape Agulhas, Pillans 8178.

PARONYCHIA.

P. brasiliana DC. has recently been gathered in the vicinity of Cape Town. The plant is an alien but appears to be spreading and has become thoroughly established in some places. It has maintained itself for at least five years on the track of the race course at Kenilworth where its area is increasing. As the plant has not been previously recorded for the Cape a brief note of the distinguishing characters may be given. Stems rather wiry procumbent, 8—15 cm. Leaves opposite, elliptical, very shortly petiolate. Stipules large, about as long as the short internodes, white membranous, ending in a white fringe. Flowers axillary. Perianth glabrous, segments almost free, hooded, with a stiff bristle at the tip. Fl. June—Oct.

Kenilworth (Race Course track) Adamson 1201, 1669, Claremont, (roadside) Adamson 1688. Newlands (waste ground) Salter 7069. Green Point Common Adamson 1911.

SOME CHANGES IN NOMENCLATURE. 1 *

By MARGARET R. LEVYNS.

A need has long been felt for a complete flora of the Cape Peninsula, an area which is probably better known than most others in South Africa. A few years ago preliminary work on such a flora was started by a number of local botanists, and it soon became evident that a very large amount of work would be necessary before a really sound flora could be produced. The existing descriptions of plants growing on the Cape Peninsula are often incomplete or wrong and it is the aim of the collaborators in this flora to examine each species in the living state and to amend the existing descriptions. In addition to this, problems of nomenclature confront the workers at every turn and frequently before these can be solved work has to be extended to embrace plants growing in other parts of South Africa. Clearing up one error has in many cases revealed others, so that in order to put one thing right it becomes necessary to embark on a number of different researches which might appear to have little connection. One of these chain problems is discussed here.

1. THE GENERA *POLYCARENA* AND *PHYLLOPODIUM*.

In October 1937, Captain T. M. Salter collected a plant which was identified as an unknown species of *Polycarena*. A short time later it was discovered that specimens of this plant were present in the local herbaria under the name *Selago cephalophora* Thunb. Many specimens quoted in the Flora Capensis under this name have a multi-ovulate ovary, and it at once became necessary to know if Thunberg's type also showed this feature. Professor Svedelius very kindly gave permission for Dr. H. Smith and Mr. C. G. Alm to dissect a flower from the type specimen. This proved to have a multi-ovulate ovary, thus confirming the suspicions raised by Captain Salter's plant. The discovery necessitated the transference of this plant to the tribe Manuleae of Scrophulariaceae. This, however, promptly raised a second problem for the calyx is slightly bilabiate and the plant therefore would seem to

* The present paper is the first of a series of communications which will appear at irregular intervals.

fit into *Polycarena*. Previous experience with these members of Scrophulariaceae had made the writer aware that a similar type of calyx was characteristic of some well established species of *Phyllopodium*, and grounds for the separation of these two genera had to be considered before the transference of Thunberg's species could be effected.

Both *Polycarena* and *Phyllopodium* were established by Bentham in 1836. The basis of their separation is the calyx which in *Polycarena* is bilabiate and in *Phyllopodium* more or less regular. Hiern in the Flora Capensis introduces a further distinction in that while *Polycarena* is stated to have a two-chambered ovary, a one-chambered ovary is attributed to *Phyllopodium*. This supposed difference in the ovary has no existence in fact as in the very large number of flowers dissected by the writer no case of a one-chambered ovary has been observed. Consequently in separating these genera one has to fall back on Bentham's distinguishing character, the calyx.

While examining *Phyllopodium capitatum* Benth. the writer observed a somewhat bilabiate calyx and as this seemed inconsistent with its position in *Phyllopodium* a large number of flowers were examined. The calyx showed some variability with regard to the degree of separation of the lobes but there was a distinct bilabiate tendency in all. *Phyllopodium heterophyllum* Benth., a much more common plant, was then examined and it too was found to possess this type of calyx. All the species of these genera in the Bolus Herbarium were then studied with regard to the character of their calyx. The majority in *Phyllopodium* showed a slightly bilabiate calyx, very few being quite regular. *Polycarena* on the other hand, showed great variability in its calyx. Some species such as *P. capensis* Benth. are definitely bilabiate, while others such as *P. tenella* Hiern are no more bilabiate than the species of *Phyllopodium* previously discussed. It follows that a feature of this type cannot be used as sole basis for the separation of two genera. Many of the species lie just on the boundary line between the two genera as defined at present and the placing of a species in its proper genus is largely a matter of personal opinion. The writer therefore proposes to sink the genus *Phyllopodium* and retain *Polycarena*. The only amendment necessary in the description of *Polycarena* is in the calyx which should be described as being either regular or bilabiate.

The following list gives the species now being transferred to *Polycarena* :—

- Polycarena cuneifolia* (Benth.) nov. comb.
- * *Polycarena Augei* (Hiern) nov. comb.
- Polycarena bracteata* (Benth.) nov. comb.
- * *Polycarena sordida* (Hiern) nov. comb.

- Polycarena diffusa* (Benth.) nov. comb.
Polycarena calva (Hiern) nov. comb.
Polycarena multifolia (Hiern) nov. comb.
Polycarena capitata (Benth.) nov. comb.
Polycarena heterophylla (Benth.) nov. comb.
Polycarena pumila (Benth.) nov. comb.
* *Polycarena rupestris* (Hiern) nov. comb.
* *Polycarena minima* (Hiern) nov. comb.
Polycarena glutinosa (Schlechter) nov. comb.
Polycarena Schlechteri (Hiern) nov. comb.
Polycarena alpina (N.E.Br.) nov. comb.
* *Polycarena Baurii* (Hiern) nov. comb.
Polycarena linearifolia (Bolus) nov. comb.
* *Polycarena Rangei* (Engl.) nov. comb.
Polycarena cephalophora (Thunb.) nov. comb.

Wherever possible the type specimen or a specimen quoted in the Flora Capensis has been studied. The exceptions are those marked *. Of these no reliable specimens are available for examination and their transference is therefore made with less certainty than in the other cases. The degree of uncertainty is due to the fact that of the species which have been examined two are incorrectly placed in *Phyllopodium*, and the possibility of some of the others being in the wrong genus must be borne in mind. The two which are not being transferred to *Polycarena* are discussed below.

The first of these is *Phyllopodium Rudolphi* Hiern, a plant of which, bearing Schlechter's number 10205, is in the Bolus Herbarium. This on examination proved to have a two-chambered ovary with a single pendulous ovule in each chamber and consequently belongs to the Selaginaceae. In this plant the bract is adnate to the calyx, the calyx is almost regular and deeply five-lobed, and there are four fertile stamens. As the genera are defined at present it fits into none given in the Flora Capensis, neither does it agree with *Cromidon* or *Globulariopsis*, two genera described by Compton. This family is in need of careful revision and the writer is not disposed to create yet another genus for this unconformable species. For the present it is probably best regarded as an aberrant species of *Selago*, a genus from which it differs only in its adnate bract, a character which is of doubtful generic importance. Schlechter 10205 therefore becomes *Selago Rudolphi* (Hiern) nov. comb.

The second species is *Phyllopodium Krebsianum* Benth. This species is entirely different from all the others which have been examined. The soft herbaceous texture of plants belonging to *Polycarena* in the wide sense is very characteristic, and dried specimens when placed in boiling

water become soft and offer considerable difficulties in dissection. *Phyllopodium Krebsianum* on the other hand has a firm texture when alive and on boiling becomes almost leathery. The writer has collected it on the Boschberg at Somerset East and the impression made by the living plant with its wide-tubed and showy corolla, is certainly not that of a *Polycarena*. For these reasons this plant is not placed under *Polycarena* and the problem of its generic position remains to be solved. *Sutera* as defined in the Flora Capensis might be extended to include it (the adnate bract is not a character of *Sutera*) or it might be preferable to place it in a separate genus. At present the position of this species must remain doubtful.

2. THE IDENTITY OF *Heisteria mitior* BERG.

In the course of an investigation into the identity of the plant named by Linnaeus *Polygala stipulacea* several references were found stating that this plant was the same thing as *Heisteria mitior* Berg. The specific name *mitior* antedates the Linnaean name *stipulacea* and it therefore became necessary to know what plant Bergius called *Heisteria mitior*. Unfortunately there is some doubt as to the plant to which Linnaeus gave the name *Polygala stipulacea*, and therefore two distinct plants which had claims to be regarded as the Linnaean plant were sent to Stockholm for comparison with Bergius' type of *Heisteria mitior*. Professor R. E. Fries kindly made the comparison and reported that neither species agreed with the plant in the Bergius collection. In order to try and clear matters up Professor Fries sent to the writer a small fragment of the type specimen and fortunately this was easily identified as the plant at present known as *Muraltia mixta* DC. This species has a characteristic calyx which marks it off from all other species with the exception of *Muraltia alopecuroides* DC. The writer then sent Professor Fries a representative specimen of *Muraltia mixta* DC which was stated to agree perfectly with the type specimen of *Heisteria mitior*. Change of name is therefore necessary and *Muraltia mixta* (L.f.) DC becomes *Muraltia mitior* (Berg) nov. comb.

3. A CORRECTION AND SOME NOTES ON CERTAIN SPECIES OF ELYTROPAPPUS.

A few years ago the writer published some new combinations in *Elytropappus* (Trans. Roy. Soc. S.Af. XXIII. 93. 1935). Recently it was discovered that two of these combinations, *E. hispidus* and *E. scaber*, had been made by Druce (Rep. Bot. Exch. Cl. Br. Is. 1916. 621. 1917). Druce therefore is the correct authority for *Elytropappus hispidus*. The case of *Elytropappus scabrus* Druce, however, is not a straight-

forward one. In the paper by the writer quoted above and in a subsequent revision of the genus (Journ. S.Af. Bot. I. 89. 1935) it was demonstrated that the name *Stoebe scabra* L.f. applies to three of four specimens of *Elytropappus* named by de Candolle *E. glandulosus* Less. var. *microphyllus*. These therefore become *E. scaber*. The fourth specimen of this variety is the genuine *E. glandulosus* Less. which therefore retains the name. In addition to the two species just mentioned two others were included in the Flora Capensis to which Druce refers, under *E. glandulosus* Less., viz. *E. gnaphaloides* (L.) Levyns and *E. longifolius* (DC) Levyns. It is therefore clear that *Elytropappus glandulosus* Less. as understood in the Flora Capensis is a mixture of four species, and the specific name *scaber* which Druce applies to this heterogeneous collection, only applies to one of them.



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PLANTAE NOVAE AFRICANAE.

"Ex Africa semper aliquid novi."—*Pliny*.

SERIES XI.

By PAYMASTER-CAPTAIN T. M. SALTER, R.N. (Ret.).

Lebeckia MacOwanii, Salter. (Leguminosae) § Papilionaceae.

Planta perennis, glabra, glauca, diffusa vel decumbens, caulibus numerosis e radice extendentibus, paucis interdum suberectis. *Caules* 30—45 cm. longi, fere 3 mm. diam., teretes, in parte superiore saepe ramosi. *Folia* linearia, cylindrica, plerumque secundo-adscententia, paulum supra medium articulata, mucronata, 3—7 cm. longa, 1·5—2 mm. diam. *Racemi* caules ramulosque terminantes, plus minusve laxi, 4—15 cm. longi. *Pedicelli* 3—6 mm. longi: bracteae parvae, anguste ovatae; bracteolae minutae. *Calyx* fere 6 mm. longus, tubo late infundibuliforme, lobisque deltoideis interne barbatis, tubo brevioribus, *Petala* aequalia: vexillum fere orbiculare, breviter unguiculatum. 1·4 cm. longum, apice leviter acutum, sicut alae laete flavum: alae 5—6 mm. latae, obtusae: carina leviter fornicata, vix rostrata, palidissime viridis. *Ovarium* 1·5 mm. latum, 6—9-ovulatum. *Legumen* stipitatum, oblongum, compressum, saepe leviter undulatum vel tortuosum, fere 5 cm. longum, 1·3 cm. latum, margine ventrale alatum.

Hab. Cape Peninsula: gravelly flats between Fish Hoek and Kommetje, one mile west of Brakkloof, Salter 7789 (*type* in South African Museum Herbarium, Cape Town), 252/4, W-Dod 1632: Camp's Bay, MacOwan 2326. Flowers Sep.—Nov.

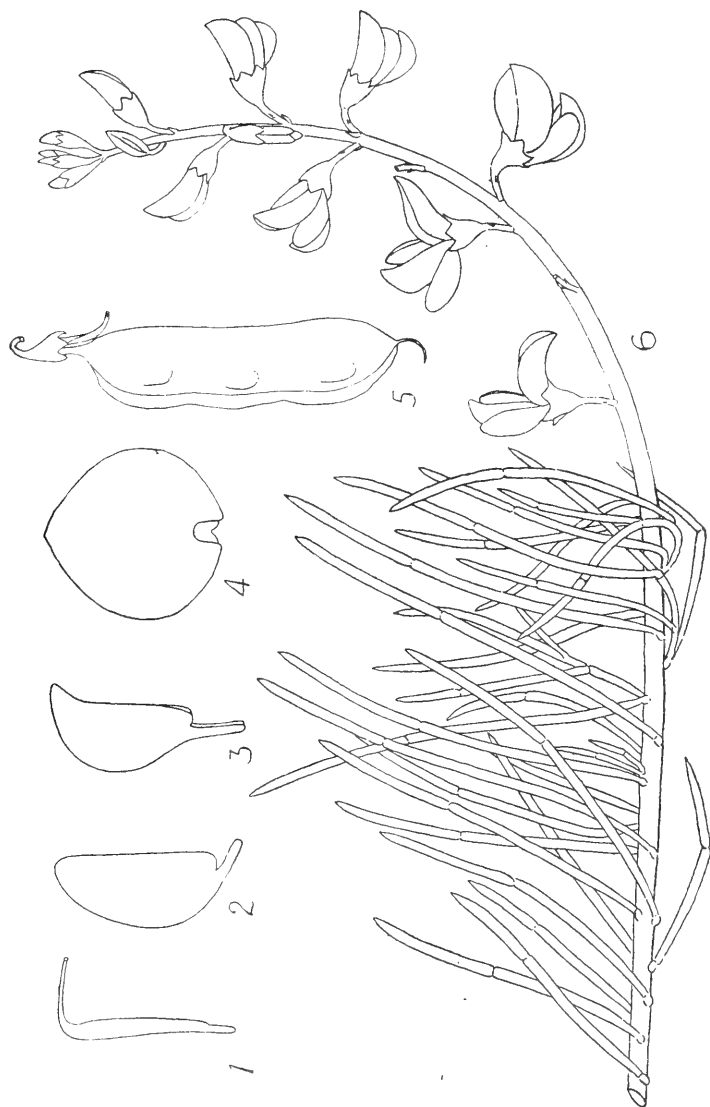


FIG. I. *Lebeckia MacOwanii*, Salter. 1. Ovary $\times 2$. 2. Ala $\times 2$. 3. Carina $\times 2$. 4. Vexillum $\times 2$. 5. Legume $\times 2$. 6. Plant, natural size. (Salter 7789.) From a drawing by G. J. Lewis.

This handsome and large flowered species is an affinity of *L. Meyeriana*, E. and Z., differing principally in that it is about one and a half times as large as that species in every part and also in its more glaucous foliage. In addition to the greater size of the bright yellow flowers, the lamina of the vexillum is more nearly orbicular, the carina is less arched and rather more acute and the style proportionately shorter.

It is very local and fairly plentiful in the type locality, but it has not been observed at Camp's Bay since MacOwan's collecting in 1882.

Oxalis Comptonii, Salter. (Oxalidaceae) § Lineares.

Planta parva gracilis, 5—12 cm. alta, caule plerumque exserto, caule, petiolis, pedunculis minute pubescentibus pilisque capitatis admixtis plus minusve pilosis. *Bulbus* parvus, ovoideus, vix 1 cm. longus, tunicis papyraceis brunneis. *Rhizoma* tenue, pallidum. *Caulis* ad 7 cm. longus, vel vix exsertus, atro-viridis, interdum squamis 1—2 parvis indutus. *Folia* fere 10, ad caulis apicem aggregata, petiolis 0.5—1.5 cm. longis: foliola 3, subsessilia, oblonga vel anguste elliptica vel linearia, apice obtusa et incisa, interdum conduplicativa, 3—7 mm. longa, 1—2 mm. lata, supra glabra, infra sparsissime pubescentia vel glabra, eciliata, callis 2 apicalibus notata. *Pedunculi* folia valde superantes, 2—4 cm. longi, apicem versus bracteis 1—2 alternantibus minutis induti vel ebracteati. *Sepala* lanceolata, 3—4 mm. longa, glabra vel sparse pubescentia, ciliata, apice conspicue rubro-bicallosa. *Corolla* 1.4—1.8 cm. longa, alba vel pallidissime rosea, tubo infundibuliforme viridi-luteo: petala subcuneata, basin versus leviter attenuata, antice rotundata, 4—7 mm. lata, ad marginem inferiorem exteriorem saepe pallide rosea. *Filamenta* (parte connata inclusa) minora 2.5—5 mm., glabra, longiora 4.5—7 mm. longa, minute glandulosa, edentata. *Ovarium* in parte superiore pubescens, ecallosum, loculis 2—3-ovulatis stylis inferne pubescentibus, superne sparse minuteque glandulosis.

Hab. Cape Province: Van Rhyn's Dorp Div.; Gift Berg, Salter 7286 (type in Bolus Herbarium), 7292, 30 May, 1938.

This species is probably nearest in affinity to *O. tenella*, Jacq., but differs in the absence of pluricellular hairs on the styles and in having 2 conspicuous apical calli on the sepals and leaflets. It may be confused with some of the larger forms of *O. glabra*, Thunb., var. *pusilla* (Jacq.) Sond., from which it differs in having gland-tipped hairs on the stem, petioles and peduncles, and in the longer styles and stamens, the latter being entirely edentate.

Colonies were found both in shady and open positions, the leaflets in the latter case being narrower. It has been named in honour of Professor R. H. Compton, who first observed the plants.

***Erica pulchella*, Houtt., var. major, Salter. (§ Hermes.)**

A forma typica differt :— Altior, robustior, rigidior, satis sparse ramosa, ramis adscendentibus, in partibus omnibus major. *Folia* 4—7 mm. longa. *Inflorescentiae* cylindricae breviores, fere 2 cm. longae. *Sepala* 2·5—3 mm. longa. *Corolla* 4·5—5·5 mm. longa. *Antherae* fere 1 mm. longae, vix 0·5 mm. latae. *Ovarium* minute puberulum.

Hab. Cape Peninsula : south of Lieferskloof, Zwartkop, *Salter* 7704 (*type* in Bolus Herbarium), hills west of Simonstown, *W-Dod* 2820, *Pillans* 8839, *Salter* 7383, 8017. Fl. Aug.—Dec.

This variety may, in the dried state, be easily confused with *E. longiaristata*, Benth. The corolla, however, closes distinctly towards the throat and is the same rich reddish purple as in the typical form of *E. pulchella*, a deeper colour than that of *E. longiaristata* which also has a wider throated corolla. Although both grow in the same area the typical form of *E. pulchella* rarely flowers before January, whereas this variety flowers from August to December. In addition to its stouter habit and its greater size in all parts, the anthers are a different shape, being twice as long as broad, whereas those of the typical form are about equal in length and breadth.

One plant (*Salter* 8017) was found in January with the flowers beginning to wither, growing on the Zwartkop ridge to the south of the Klaver Valley, Simonstown, in proximity to a large colony of the typical form which is abundant in that vicinity. The latter was mostly in bud, though here and there it was beginning to flower. The difference in the two varieties in the wild state was very obvious.

AMALGAMATION OF THE GENUS *HALLIA*, THUNB. WITH *PSORALEA*, L.

By PAYMASTER-CAPTAIN T. M. SALTER, R.N. (RET.).

An examination of living plants of five out of the six¹ known species of *Hallia* and also of fourteen local species of *Psoralea* discloses the fact that the genus *Hallia* presents no characters by which it can reasonably be separated from *Psoralea*.

It is difficult to understand how this genus, which is so obviously near to *Psoralea* and has an identical legume, was ever placed in the Tribe Hedysaræ, although two of the species, *H. cordata* and *H. imbricata* were originally attributed to *Hedysarum* by Linnaeus.

The definitions of *Psoralea* and *Hallia* as given in Bentham and Hooker's *Genera Plantarum*, Vol. I, correspond well with the characters of the plants examined with the exception that in all the species of *Psoralea* the style is swollen at the upper bend (as in *Hallia*) and not at the base.² In four species, *P. decumbens*, Ait., *P. fascicularis*, D.C., *P. glaucina*, Harv. and *P. restioides*, E. & Z., the stamens have been found to be completely monadelphous, while in *P. capitata*, L.f. the tenth stamen is lightly attached to the tube and very easily separable, as is the case in all species of *Hallia*. It therefore seems that the generic definition of *Psoralea* should be amplified in these two respects. Otherwise there appear to be no characters in *Hallia* to exclude the genus from Bentham and Hooker's generic definition of *Psoralea*.

It is true that there is variation in the characters of the different species of *Hallia*, some being more closely akin to *Psoralea* than others. In *H. virgata*, Th. and *H. alata*, Th. the stipules are wholly or partly adnate to the petioles and the vegetative parts have the characteristic pellucid glandular dots of *Psoralea*, while in *H. asarina* (Berg) Th., *H. cordata*, (L) Th. and *H. imbricata* (L) Th. the stipules are free and the dotting is almost entirely absent. These variations, however, can

¹ The sixth, *H. filiformis*, Harv. was suspected by Harvey himself as a monstrosity.

² Mr. E. G. Baker and Miss D. Hillcoat have kindly examined several of the non-African species of *Psoralea* for me at the British Museum and they inform me that in all of them the swelling in the styles is exactly as I have found it to be, but as there are over a hundred species of *Psoralea*, they cannot say for certain that it is the case in all.

scarcely be held to separate them *inter se* and it therefore seems best to transfer all, rather than the first two only, to *Psoralea* for they present no characters other than those to be found in that genus.

The calyx in *Hallia* has an enlarged lower lobe and the two upper lobes are variably connate, exactly as in *Psoralea*. The leaves are simple, but this character is also found in some species of *Psoralea*. The legumes in both genera, as far as I have examined them are wrinkled or pitted.

The abridged generic definitions given by Harvey in the *Flora Capensis*, Vol. II, are misleading when tested with the species which I have examined. In *Psoralea* the vexillum is by no means always broad with reflexed sides, the stamens are never completely diadelphous and the ovary in some species is stipitate in the same very minor degree as in *Hallia*, but the stipe in both cases is so short as to be a negligible character. In *Hallia* the calyx, which is like that of *Psoralea*, can hardly be described as sub-equally 5-fid, the stamens are not completely monadelphous and the legume is hard and pitted, not membranous.

The following new names are proposed :—

Psoralea alata (Thunb.) Salter.

Psoralea asarina (Berg.) Salter.

Psoralea cordata (L.) Salter.

Psoralea inbricata (L.) Salter.

Psoralea laxa, Salter. (*Hallia virgata*, Thunb., non *Psoralea virgata*, Nutt.)

SOME NOTES ON THE CORRECT IDENTITY OF OXALIS PES-CAPRAE, LINN. AND OXALIS PURPUREA, LINN. WITH SOME REMARKS ON THE LIMITATIONS OF A SPECIES IN THE GENUS OXALIS.

BY PAYMASTER-CAPTAIN T. M. SALTER, R.N. (RET.).

I. For many years three of the commonest and best known species of South African *Oxalis* have been known by false names or names other than those first allotted to them.

The species in question are *O. cernua*, Thunb., now a troublesome weed in many parts of the world, *O. variabilis*, Jacq. and *O. purpurea*, Thunb. (sic) as understood by Sonder in Vol. I, p. 331 of the *Flora Capensis*, hereinafter referred to as *O. purpurea*, Sond. *O. cernua*, Th. and *O. variabilis*, Jacq. (a name erroneously attributed to Lindley by Sonder), were first described by Linnaeus in *Sp. Plantarum*, Ed. I. (1753) under the names *O. pes-caprae*, Linn. and *O. purpurea*, Linn. respectively, the latter being the species more fully described later by Thunberg (F. Cap. 535) as *O. purpurea*. *O. purpurea*, Sond. as exemplified by such specimens as E. and Z. 706, 707, 708, Zey 234, 2112 (ex parte), 2113 and 2115 (ex parte), bears no relationship to *O. purpurea*, Linn., and belongs to an entirely different group in the genus (see Section V).

II. OXALIS PES-CAPRAE, Linn. (*O. cernua*, Thunb.).

This name was assigned by Linnaeus to the plant illustrated in *Burman Plantarum Africanorum*, 80, t. 29., a species with yellow flowers and although, owing to the ill-drawing of the leaves, there was ambiguity in Burman's description (*pentaphylla et hexaphylla*), Linnaeus states definitely that the leaves are ternate and bi-partite and the flowers yellow. The inflorescences in this figure¹ give an excellent representation of the species now known as *O. cernua*, Th.

The name *pes-caprae* has since been connected with and, although of an earlier date, treated as a synonym of the species *O. caprina*, Linn.

¹ Mr. S. Garside, M.Sc. informs me that in his opinion this figure has all the characters of a drawing by Claudius.

(vide Kew Index) owing to specimens which appear to be this plant? having been erroneously inserted in the Linnaean Herbarium (Sheet 13 in Jackson's list) under the name *pes-caprae* at a date long after the publication of the Spec. Plantarum. Linnaeus' description of *O. pes-caprae* and the figure he cites cannot possibly apply to this frail plant which has much smaller pale lilaceous flowers and which he himself named later as *O. caprina*, Linn. Syst. (1774). There is, however, an imperfect specimen of *O. cernua*, Th. on Sheet 14, Linn. Herb. under the name *O. pes-caprae* in an unknown hand, but this is also a late addition.

The type of *O. pes-caprae*, L. is therefore Burman's figure referred to above and there cannot be the least doubt that it is the well-known species later described by Thunberg as *O. cernua*.

Neither Jacquin or Sonder make any mention of the name *O. pes-caprae*, but Knuth in Pflanzenreich, Oxalidaceae (1930) has treated it as a synonym of *O. cernua*, Th.

The species, or group, is wide-spread in South Africa and it may be stated here that the form known as *O. sericea*, L.f. cannot at best be considered anything more than a variety. The typical forms admittedly appear to be different, but they are connected by numerous intermediates and there are many still more extreme forms which, taken in themselves, would be equally or more deserving of taxonomic separation.

III. OXALIS PURPUREA, Linn. (*O. variabilis*, Jacq.).

Linnaeus, in Sp. Pl. I. p. 433, cites 3 figures of this species :—

Breyn. Centuria prima, 102, t. 46.

Commelin. Horti Medici I, 41, t. 21.

Burman. Plant. Africanorum, 67, t. 27, f. 3.

and the first two of these give unmistakable representations of the species now known as *O. variabilis*, Jacq. (Oxalis, pp. 89, 90, tables 52, 53). The third is very poorly drawn, but it is at least more like this species than *O. purpurea*, Sond.

Both Thunberg (Diss. Oxal. 1781) and Jacquin (Ox. p. 93, t. 56), as their descriptions show, correctly upheld Linnaeus' species, the latter attributing it to Linnaeus and citing the first two figures referred to above (Ox. p. 19), but it was not Thunberg's custom to quote the original author's name.

Sonder appears to have entirely overlooked the fact that the name *purpurea* was first used by Linnaeus and evidently did not realise that Thunberg and Jacquin were merely upholding Linnaeus' species, for he cites *O. purpurea*, Jacq. (which is really *O. purpurea*, L.) as a synonym

Some of these are possibly a form of *O. livida*, Jacq., but this cannot be certain in the absence of bulbs.

of *O. variabilis*, Jacq., correctly in so far that the two are identical. He has, however, by some inexplicable error, described and applied the name *purpurea* to plants belonging to an entirely different group in the genus (see Sect. V) and has referred to Thunberg as the author of the name. At the same time he cites *O. humilis*, Th. as his var., γ , but the identity of this species will be dealt with in Sect. IV.

I am indebted to Mr. Carl G. Alm for kindly re-examining Thunberg's specimens of *O. purpurea*, at Uppsala, in comparison with recently collected specimens of the two groups sent to him by me. He informs me that these old specimens are in a bad state and not easy to recognise, but the following is a summary of his opinion on them. Distributed over 3 sheets labelled "*purpurea*" there are 7 specimens of *O. purpurea*, Linn. and 2 specimens of *O. purpurea*, Sond. Of the specimens labelled *O. variabilis* one appears to be *O. purpurea*, Linn. and 2 (named *O. variabilis*, var. *rubra*) are *O. purpurea*, Sond. This leads to the supposition that Thunberg did not, from his dried specimens, recognise the fundamental differences between the two groups.

Sonder may have been misled by the specimens named *O. purpurea* on Sheets 9 and 10 in the Linnaean Herbarium which were incorrectly so named much later by Linn. fil. and are not types. These specimens are the species described as *purpurea*, Th. by Sonder and not the real *purpurea* of the elder Linnaeus, whose detailed citations of figures leave no doubt what species he intended.

The common species now known as *O. variabilis*, Jacq. or incorrectly according to Sonder, *O. variabilis*, Lindl., must therefore re-assume its original name of *O. purpurea*, Linn.

It is probable that the plants depicted in the old figures were the reddish-purple flowered form figured by Jacquin (t. 53) which is very common in the south-western districts and this, I think, should be looked upon as the typical form. The name *purpurea*, L. must, however, in my opinion, be widely applied to a prolific group of plants with white, reddish, mauve, yellow or orange flowers, but all having the same essential characters in combination (see Sect. V).

To the recognised synonyms of this species (excluding *O. violacea*, Th.—actually *O. violacea*, L., an American species which has umbellate flowers—cited in Pflanz. Ox. 1930, p. 345), such species as *O. breviscapa*, Jacq., *O. stictophylla*, Sond., *O. decipiens*, Schltr., *O. laburnifolia*, Jacq., *O. sanguinea*, Jacq. and *O. humilis*, Th. will probably have to be added. These species are merely the few chance forms, out of an almost infinitely variable group, dried specimens of which have come under the scrutiny of European botanists who evidently could not even recognise their affinity, allotting them, as they did, to different sub-sections on the

evidence of comparatively unimportant characters. The group is actually composed of a chain of overlapping and interlocking forms which seems to defy classification as separate entities by any recognised taxonomic system.

IV. *Oxalis Eckloniana*, Presl. VAR *SONDERI*, Salter (*O. purpurea*, Sond.).

The plants collected by Zeyher³, referred to in Sect. I and falsely named *O. purpurea* in the *Flora Capensis* by Sonder, together with those specimens in Linnaeus' and Thunberg's Herbaria which are not the true *purpurea* of Linn., require a new name.

It would be convenient if the name *O. humilis*, Th. could be adopted, especially as the very imperfect single specimen of this plant in Thunberg's Herbarium is (so Mr. Alm informs me) apparently conspecific with *O. purpurea*, Sond., and thus with Zeyher's specimens. Unfortunately Thunberg's description of *O. humilis* (Fl. Cap. Th. p. 535) shows conclusively that he was describing a plant of the group *purpurea*, Linn. The words "bracteae duae oppositae, in medio scapi" and "tubus inflatus ampliatus" could not possibly be applied to *O. purpurea*, Sond., whereas they describe two of the most salient characters in the *purpurea*, Linn. group. (See Section V). This was recognised by Sprengel who cites *O. humilis*, Th. (evidently from the description) as a synonym of *O. purpurea*, Linn. (Syst. Veg. XIV Vol. II, p. 434).

Here then is a case where one plant is described and a specimen belonging to an entirely different group labelled with the same name in the herbarium of the author himself. The description is unmistakeable and must prevail.

Since there is no available synonym, it would appear at first sight, that all that is necessary is to apply some entirely new name to these plants, but in actual fact the matter is not so simple as it seems. As is the case with the true *O. purpurea*, L., they also belong to a similar intricate group, comprising the named forms *O. Eckloniana*, Presl., *O. approximata*, Sond., *O. bifolia*, Sond., *O. salmonicolor*, Schlechter and *O. Bolusii*, R. Knuth., which vary in the same way in the colour of the flowers and shape of the leaves. When all the intermediate forms are taken into account, these species can only, at the best, be treated as ill-defined varieties one of the other and I have perforce chosen the first-published name *O. Eckloniana*, Presl. (in which the typical form is

³ Sonder's variety γ is represented by E. and Z. 724 (*O. nidulans*, E. and Z.) and E. and Z. 716 (*O. fallax* E. and Z.). The former is quite a separate species for which the name *O. nidulans*, E. and Z. must be revived and the latter is inseparable from the typical form. The name *fallax* had, however, been previously employed by Jacquin.

yellow-flowered) for the group. The name *O. Eckloniana*, Presl., var. *Sonderi* is therefore proposed for the form represented by Zeyher's plants.

V. DISTINCTIONS BETWEEN THE GROUPS ECKLONIANA, PRESL. AND *O. PURPUREA*, L. The group of plants which may be referred to as the Eckloniana group differs in the following essential characters from the true *purpurea* (*variabilis*) group. The styles and stamens are very slender and, when released from the corolla tube, spread as shown in Fig. 1.A and the anthers are sagittate. The tube of the corolla is almost cylindrical, the bracts, if present, are close to the calyx and the leaflets are without the characteristic pellucid dots (which turn black on drying) of the true *purpurea* group. The *purpurea* group can at once be distinguished by these dots or short streaks, by the more open corolla tube and by the bracts which are usually below the middle of the peduncle, while the styles and stamens are stouter and erect and the anthers oval as shown in Fig. 1.B.

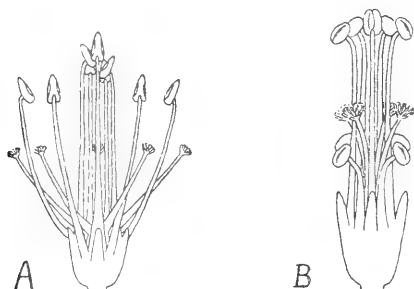


FIG. 1. Arrangement of styles and stamens in A. Eckloniana group (*O. purpurea*, Sond.) when released from the corolla tube and B. true *purpurea* group (*O. variabilis*, Jacq.), enlarged. Note :—In the long-styled form of A the styles are erect and both sets of stamens are spreading.

VI. THE COMPLEXITY OF CERTAIN GROUPS.

Nine seasons of collecting and observation in the south western Cape, during which I have covered at least 40,000 miles in the *Oxalis* season and had under cultivation 650 different sets of bulbs, has convinced me that in certain groups, though not by any means all, the numerous different forms vary and overlap so inextricably that any attempt to classify them must be abortive. Again, all collectors of *Oxalis* in South Africa, including myself, have only explored a small fraction of the huge and often somewhat inaccessible areas where this genus abounds, areas in

which, during the main *Oxalis* season (mid-winter), there is little else to attract a botanist. The genus is prolific both in quantity and variety and one may therefore speculate on the variants still to be discovered.

Oxalis are usually found in local colonies and in these colonies, large or small, the plants, though more than one species may be present, are all of one pure strain. I once observed, within a few miles of Cape Town, no less than ten entirely different species growing on a plot of ground no larger than a tennis court. Beyond a few crosses between colour forms, I have only once suspected hybridisation and that between *O. pes-caprea*, L. and *O. sericea*, L.f. which are so nearly related that I take them to be the same species. It therefore seems unlikely that the extraordinary number of local variations can be accounted for by hybridisation in the past.

Should herbarium botanists find difficulty in the determination, from keys and descriptions, of dried specimens of *Oxalis* which come into their hands, it may be some satisfaction to them to learn something of the complexity and difficulties presented by the genus in the field and to know that in some groups at least, they may be attempting what is practically impossible.

In the foregoing notes I have omitted all reference to authors whose works do not affect the main issue, consisting as they generally do of mere compilations. While I hope to have still further opportunities of making observations in the field, I have also purposely refrained for the present from attempting to give a complete and definite synonymy for the three species or groups dealt with here.

I am very much indebted to the following botanists for the assistance they have given me. To S. Garside, Esq., M.Sc. for his opinion on the history of the specimens in the Linnaean Herbarium and to A. W. Exell, Esq., M.A. for information as regards their actual identity: also to Mr. C. G. Alm and Dr. Harry Smith for comparing my specimens with those in Thunberg's Herbarium at the Botaniska Institutionen at Uppsala.

SOME CHANGES IN NOMENCLATURE II.

The following are changes in name or in connotation of species that have arisen in the course of work on the preparation of the Flora of the Cape Peninsula. In several cases help in references to the older literature and in other ways has been given by workers overseas, especially by the staffs of the herbaria at Kew and at the British Museum. To these and to others mentioned we desire to express our sincere thanks.

I. By R. S. ADAMSON.

AFRACHNERIA.

In this genus created by Sprague (Journ. Bot. LX. 138, 1922) for the South African species before placed in the invalid *Achneria* Munro several new combinations are necessary. The species concerned are different in so many characters from those of *Pentaschistis* that it seems best to retain them in a separate genus rather than to sink them in the latter as has been done. (cf. McClean S. Af. Journ. Sci. XXIII 281, 1926). The combinations are :—

<i>A. Ecklonii</i> (Nees)	Adamson	comb.	nov.
<i>A. capensis</i> (Steud.)	"	"	"
<i>A. aurea</i> (Nees)	"	"	"
<i>A. ampla</i> (Nees)	"	"	"

PENTAMERIS.

The plant named *Danthonia macrantha* Schrad. in Fl. Cap. VII. 515, 1899 and elsewhere agrees much more closely with the genus *Pentameris* and should be transferred as *P. macrantha* (Schrad.) Nees Linnaea VII. 312, 1832 (ex. syn. cf. Schweicherdt Fedde Repert. XLIII 91, 1938).

KOELERIA.

The Cape species is distinct from the northern *K. cristata* Pers. and is *K. capensis* (Thunb.) Nees.

BROMUS.

B. japonicus Thunb. Fl. Jap. 52. t111, 1784 antedates *B. patulus* Mert. & Koch in Roeh. Deut. Fl. I. 685, 1823.

B. Gussonei, Parl. is the correct name for the plant known in South Africa as *B. maximus* Desf.

POLYGONUM.

P. undulatum (L.) Berg. Desc. Pl. Cap. 135. 1767 antedates *P. atraphaxoides* Thunb. Prod. Pl. Cap. 77, 1794. This is quite distinct from *P. undulatum* Murr. (1775) which is a synonym of *P. alpinum* Vill. *P. salicifolium* Brouss. ex Willd. Enum. Pl. 428, 1809, antedates *P. serrulatum* Lag. Nov. Gen. & Sp. 14, 1816.

RUMEX.

R. sarcorrhizus Link Enum. Hort. Ber. 1, 351. 1821 antedates *R. cordatus* Desf. Cat. Hort. Par. 389. 1829. The name *R. cordatus* was first employed for the species in 1804 (Desf. Tabl. ed. 1. 40) but as no description was given Link's name has priority.

NYMPHAEA.

The Cape species is not *N. stellata* Willd. but *N. capensis* Thunb., the two are not synonymous.

HERMANNIA.

In sinking the genus *Mahernia* a number of name changes have been needed.

The combination *H. verticillata* K. Schum. in Eng. & Prantl Nat. Pflanz. III. 6. 80, 1890, is not valid for *M. verticillata* L. Mant. I. 497. 1767. owing to *H. verticillata* Berg. Desc. Pl. Cap. 169, 1767. The latter is the same as *H. pinnata* L. Sp. Pl. 694. but as Bergius' work was published shortly before the Mantissa the epithet "verticillata" is not valid for this plant. The earliest name seems to be *H. ciliaris* L.F. Suppl. 302, 1784.

The correct citation for *M. scabra* Eck. & Zeyh. is *H. lacera* Fourcade Trans. Roy. Soc. S. Afr. XXI. 101, 1932. This is based on *M. lacera* E. Mey. ex Drège Zwei Pflanz. Doc. 130. 1843 which is a name only without description or figure. In this case Meyer's name need not be quoted in the new combination.

SONDERINA.

In removing the South African species that were placed by Sonder in *Ptychotis* from that genus, Wolff (Das Pflanzr. IV. 228. 92. 1927) placed four of the five species in a new genus *Sonderina*. The fifth species, *P. didyma* Sond., Wolff places in the genus *Tragiopsis* Pomel along

with two species that are native of N. Africa and the western Mediterranean. *Tragiopsis* Pomel is however antedated by *Tragiopsis* Karst. and not valid. The N. African species have been placed in *Brachyapium* Baill. The problem arises about the position of the S. African species. Both *Sonderina* and *Brachyapium* are genera based on the form of the fruit. *P. didyma* Sond. is much like in general appearance and habit *S. hispida* (Sond.) Wolff. It agrees also in the pinnately compound leaves. The two species of *Brachyapium* which are closely related to one another have ternately compound leaves. *P. didyma* differs from *Sonderina* in the fruit being as broad or broader than long and cordate at the base. The fruit approaches in character those of the species of *Brachyapium* but it has less prominent ridges, is less constricted at the commissure, and is less wide in proportion to its length. Taking all the characters into consideration the more natural arrangement seems to be to place the species in *Sonderina*. This is supported by the geographical distribution, *Brachyapium* occurring in Spain and N.W. Africa, *Sonderina* being wholly South African. The species would be *S. didyma* (Sond.) Adamson comb. nov.

ROELLA.

R. ericoides Good Journ. Bot. LXII. 48. 1924 is antedated by *R. ericoides* Spreng. Syst. I. 723, 1825 and by *R. ericoides* Buek in Eck. & Zeyh. Enum. 385. 1837, and hence cannot stand. The species is distinct and needs a new name. *R. Goodiana* Adamson Comb. nov. is suggested.

ISOLOBUS.

Lobelia (Isolobus) spathulata Good Journ. Bot. LXII. 50 1924 is very closely allied to *I. Ecklonianus* Sond. and the differences are not more than will justify varietal rank. It is proposed to make the plant a variety, *I. Ecklonianus* var. *spathulatus* (Good) Adamson var. nov. The variety is the only form found on the Peninsula.

II. BY FRANCES M. LEIGHTON.

AGAPANTHUS AFRICANUS (L.) HOFFMGG.

It has long been apparent to those who know the genus *Agapanthus* in the field that more than one species was included under *A. africanus* (L.) Hoffmgg.

The first reference to *Agapanthus* known to the writer appeared in Hermann's Catalogue of 1687, and the earliest figure in Plukenet's

Almagestum in 1696. In this work it is stated that this plant had flowered in the Hampton Court Gardens in 1692. It was figured by Commelyn (Hortus Amstelodamensis 133 t. 67), by Seba (Thesaurus 1, p. 29 t. 19, fig. 4), and by Breynius (Prodromus 1 p. 25). All these figures undoubtedly represent the small *Agapanthus* which grows on the summit and upper slopes of Table Mt. and in other parts of the South-Western Districts.

After the publication of the Species Plantarum, the first figure which appeared was Phillip Miller's in the Gardener's Dictionary p. 140 t. 210 (1760). This represents in the writer's opinion, an overgrown specimen of the form referred to above.

When L'Héritier in his Sertum Anglicum (1788) established the genus *Agapanthus* he gave the epithet *umbellatus* to the species but from his citation it is certain that he was describing the small *Agapanthus* only.

The first clear indication of the inclusion of a second species under this name is found in Redouté's Liliacées (1813) t. 403. He states that he recognises two different forms in this species but does not consider the second sufficiently distinct to warrant specific rank. Redouté's figure represents *A. orientalis* [redacted], a larger plant which is found in the southern and eastern parts of South Africa. The distribution of the latter species is from Knysna eastwards along the coastal region to Natal and Zululand and thus it is unlikely that it was introduced to Europe before *A. africanus* (L.) Hoffm. g.

From this time on, there was a tendency to relegate the true *A. africanus* to the rank of a variety or, as in Loddiges Botanical Cabinet 42 (1817), to make a new species of it.

Agapanthus plants respond very quickly to cultivation and there is a marked difference in size between specimens from the wild and those grown in gardens for several years. Hence in drawing up these descriptions the measurements are those of plants from the wild or those which have been only recently introduced into gardens.

A. africanus (L.) Hoffm. g. is very variable in size and general appearance but there is insufficient justification in the writer's opinion for splitting it into species or even varieties.

***Agapanthus africanus* (L.) Hoffmanssegg, Verz. Pfl.: 35 (1824) *A. africanus* (L.) Dur. and Schinz. Consp. Flor. Afr. V: 354 (1893); *Crinum africanum* Linn. Sp. Pl. ed. 1. p. 292. (1753); *Tulbaghia Heisteri* Fabric. Enum. Pl. Helmstad (1763); *Maukhia linearis* Thunb. Nov. Gen.: III (1781); *M. linearis* Thunb. Prod. Pl. Cap.: 60 (1794); *M. africana* Dahl. Obs. Bot. Syst. Gen. (1787); *Agapanthus umbellatus* L'Hérit. Sert. Angl. p. 17 (1788); Aiton Hort. Kew. ed. 1: 414 (1789); Willd. Sp. Pl. 2. Pt. 1. 47 (1799); Red. Lil. 1: 6 (1802); Roem. et Schult 7,**

Pt. 2, 997 (1830) partly; Kunth Enum. IV, p. 478 (1843) excl. vars.; Engl. Naturl. Pfl. II, 5: 53 (1888); *A. umbelliferus* Poir. Encl. Meth. Bot. Suppl. 1: 155 (1810); *A. minor* Lodd. Bot. Cab. 42 (1817).

Rhizome giving rise to thick fibrous roots and to shoots bearing 8—18 foliage leaves and the inflorescence. *Leaves* in two ranks erect or suberect, canaliculate somewhat leathery in texture, apices obtuse or subacute, 10—23 cm. long, 0.9—1.2 cm. broad. *Peduncle* erect, terete, 24—51 cm. high. *Spathe valves* deciduous. *Pedicels* 12—29, 1.5—4.5 cm. long with threadlike bracts arising at their bases. *Perianth* deep blue-violet in colour, 2.5—3.5 cm. long; tube 1—1.3 cm.; segments 1.5—2.2 cm. long; outer 0.5—0.6 cm., inner 0.7—1 cm. broad. *Stamens* up to 0.5 cm. shorter than the perianth. *Pistil* finally as long as the stamens.

Hab. Cape Peninsula: Clearing, Kirstenbosch, *Esterhuysen* 697! Kalk Bay Mt. *Wolley Dod* 758! Stellenbosch: Banhoek, *Martley Bolus* Herbarium 22380! Paarl: Roberts Vlei, *Pillans* 6791. Caledon: Kleinmond, *Fuller* 109! Hangklip, *Pillans* 8330! Riversdale: *Ferguson* Nat. Bot. Gdns. 807/35! Langeberg, *Muir* 1344!

Agapanthus orientalis Leighton sp. nov. *A. umbellatus* Red. Lil. 403 (1813); *A. umbellatus* var. *maximus* Edward's Bot. Reg. (1843) 7.

Rhizoma crassum. *Folia* 16—20, disticha, succulenta, arcuata, circa 70 cm. longa, ad 5.5 cm. lata. *Pedunculus* erectus, teres, 60 cm. altus et ultra. *Spathae* deciduae. *Pedicelli* saepe ad 110, patentes 9—12 cm. longi bracteis angustissimis basi induti. *Perianthium* coeruleum, 4.2—5.5 cm. longum, tubo 1.5—2 cm. longo, segmentis superne patentibus 2.7—3.5 cm. longis, 3 ext. 0.7—0.8 cm. latis, 3 int. 0.9—1 cm. latis. *Filamenta* demum perianthio aequilonga vel paulo longiora. *Ovarium* 1 cm. longum, stylo ad 3 cm. longo.

Hab. Pondoland: Port St. Johns *Pillans* 7198 (*type* in Bolus Herbarium)! Kentani: Pegler 629! Humansdorp: Diep River, *H. Bolus* 2491!

Rhizome stout, with thick fibrous roots. *Leaves* 16—20, in two ranks, succulent, arcuate, about 70 cm. long, up to 5.5 cm. broad. *Peduncle* erect, terete, 60 cm. or more in length. *Spathe valves* deciduous. *Pedicels* spreading, often as many as 110, 9—12 cm. long with narrow thread-like bracts at the base. *Perianth* blue, 4.2—5.5 cm. long, tube 1.5—2 cm. long, segments spreading 2.7—3.5 cm. long, 3 exterior 0.7—0.8 cm., 3 interior 0.9—1 cm. broad. *Filaments* finally as long as, or a little longer than, the perianth. *Ovary* about 1 cm. long. *Style* up to 3 cm. long.

Further investigation may show this species to be *A. multiflorus* Willd. (Willd. Enum. 353.)

The differences between *A. africanus* (L.) Hoffm. and *A. orientalis* Leighton are as follows :

1. *A. africanus* is a smaller plant growing in less dense clusters than *A. orientalis*.
2. The leaves of *A. africanus* are narrow, erect and fairly rigid while those of *A. orientalis* are broad and, owing to their soft character, reflexed from the tips towards the base.
3. The peduncle and pedicels are shorter in *A. africanus*.
4. In *A. africanus* there are fewer flowers in an inflorescence and the perianth segments, relative to the size of the flower, are broader. The perianth is deep blue-violet in *A. africanus* whereas in *A. orientalis* it is of varying shades of sky blue.

To the Director of Kew, the writer is indebted for extracts from several books which were not available in South Africa.

III. BY T. M. SALTER.

Virgilia oroboides (Berg.) Salter. Comb. nov., vice *Virgilia capensis*, Linn. Mant. (Nov. 1767). First described by Bergius in Berg. Desc. Pl. (Oct. 1767) p. 142, as *Sophora oroboides*, Berg.

Oxalis falcatula, Salter. Nom. nov., vice *Oxalis falcata*, Sond. in Flor. Cap. I. (1860) p. 322. The specific name *falcata* E. and Z. had previously been employed by Ecklon and Zeyher in Enum. Pl. (1835) p. 95 for another species (*O. pentaphylla*, Sims.).

Oxalis nidulans, E. and Z., var. **denticulata** (W-Dod.) Salter. Var. nov., vice *O. denticulata*, W-Dod. (pars rubra). In the original description of *O. denticulata*, W-Dod. (Journ. Bot. (1900) p. 170) two plants are cited without specifying the *type*. Of these W-Dod. 1265 (alba) is *O. nidulans*, E. & Z., but 1298 (rosea) is a distinct variety. The trivial name *denticulata* is here reduced to varietal rank and applied to the red form only. *Schlechter* 7761, which has been cited as *O. purpurea*, Th. (sensu Sonder) is this variety.

Oxalis pes-caprae, Linn., var. **sericea** (L.f.) Salter. Var. nov., vice *O. sericea*, L.f. When all forms of the species *O. pes-caprae*, L. are taken into account, *O. sericea*, L.f. cannot be considered other than a variety.

Oxalis polyphylla, Jacq., var. **pentaphylla** (Sims) Salter. Var. nov., vice *O. pentaphylla*, Sims. The variety is identical with the typical form with the exception that most of the leaves are 5-foliate. A few of the small outer leaves are usually 3-foliate. A form otherwise identical occurs near Hermanus in which the leaves are 7-foliate. Parallel variations in the number of leaflets occur in other species of *Oxalis* and such variants are mere varieties and not separate species.

BOOK REVIEW.

THE CLASSIFICATION OF TROPICAL WOODY VEGETATION-TYPES. Dr. J. Burt Davy. Imperial Forestry Institute paper No. 13. Oxford. 2s. 6d. 1938.

The naming of vegetation types has long been a bone of contention amongst ecologists and geographers and differences of opinion are so great that one often finds it necessary to discover the "school" to which a worker belongs before settling down to digest his contribution.

Here we have, however—from the pen of an old friend of South African Botany—a straightforward attempt, intelligible to all, to combine in one review a "synonymy," as it were, of the names in use amongst Forest Officers in the British tropical possessions, and to suggest, with a view to stabilisation, those terms which should be retained.

On the whole it is a successful work and allows one to class the several vegetation types with some ease.

Some of the names suggested for retention are, perhaps, not altogether as suitable, on theoretical grounds, as one might have wished, but there is no question of their practical usefulness.

In discussing the various systems propounded we are a little disappointed to find Dr. F. E. Clements' "Plant Succession, an analysis of the Development of Vegetation" dealt with so briefly, on the grounds that it is "largely an exposition of the phenomena of succession." In our experience it is not infrequently the case that adjacent climaxes (types) can only be adequately distinguished by a careful consideration of the successional stages leading to their development. In any case this brief treatment is paradoxical in view of the attention given to Champion's "Preliminary Survey of the Forest Types of India and Burma."

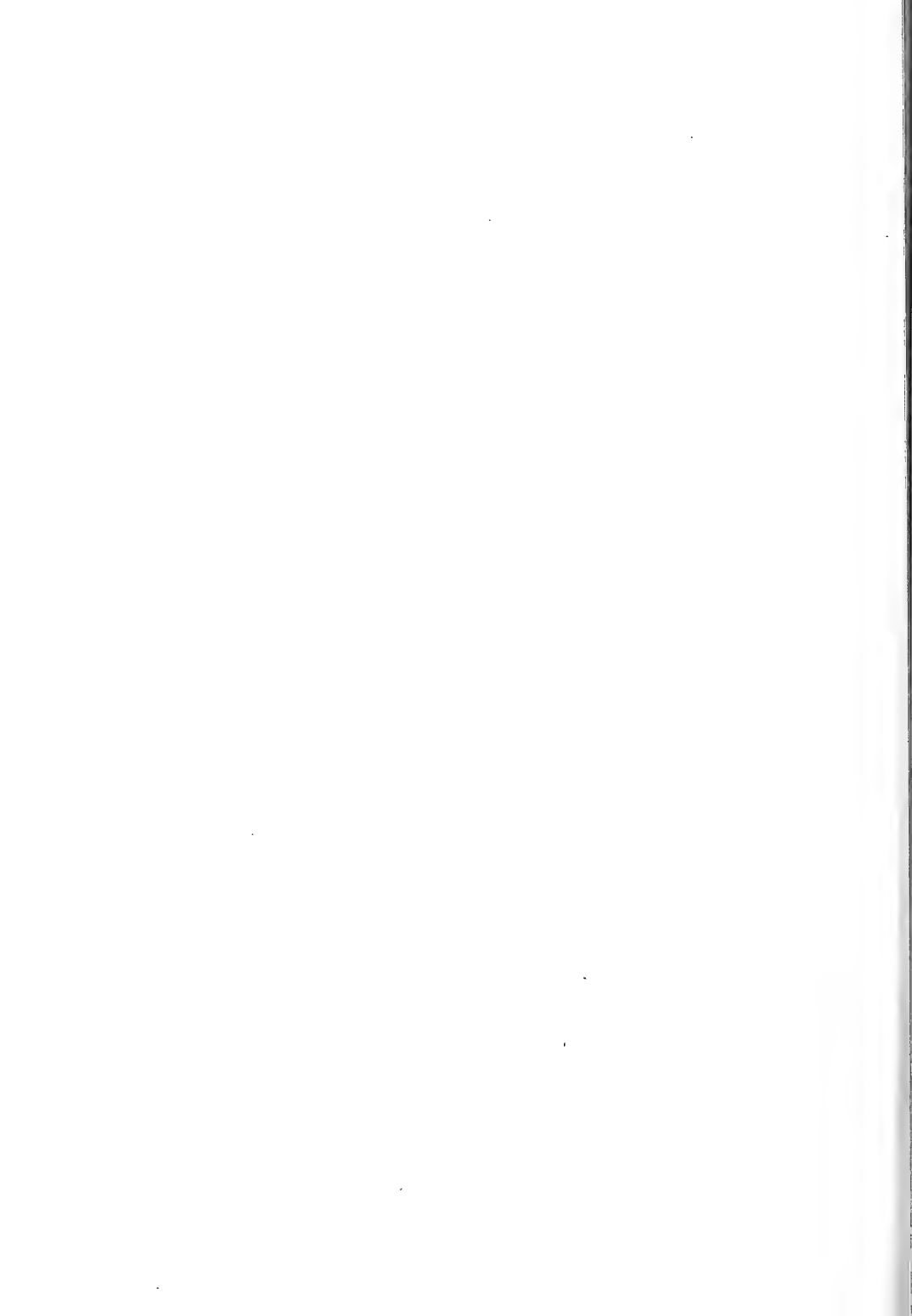
To our view the difficulties which, from the theoretical, rather than the practical, point of view these suggested names for retention present, will only be resolved when vegetation types are defined in terms more of climate and less of the plants constituting them.

Thus the word "tropical" is used here without definition as to whether "within the tropics" or "tropical climate" is intended.

For instance "Tropical Montane Forest" is used to describe a vegetation type, which, in our view, develops in a temperate climate resulting in this case from elevation in the tropics. The term "Temperate Evergreen Forest" where temperate connotes climate and not locale would be, we think, a better term.

Similarly Tropical Savanna-woodland is excellent provided the term has a climatic and not local significance. Otherwise fresh difficulties will be introduced by this system for extra-tropical (here used geographically) vegetation—notably our own north-eastern Transvaal Mopane country.

H. B. G.



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VOL. V.

PLANTAE NOVAE AFRICANAE.

“Ex Africa semper aliquid novi.”—*Pliny*.

SERIES XII.

(With Plates 6 and 7.)

By MISS L. GUTHRIE, N. S. PILLANS and PAYMASTER-CAPTAIN
T. M. SALTER, R. N. (Ret.)

Leucadendron cryptocephalum, L. Guthrie. (Proteaceae).

Frutex ad 1 m. altus, ramulis puberulis. *Folia* 7—10 cm. longa, 1—1·5 cm. lata, ex toto luteo-viridia, superiora adpresso-pubescentia, capitulum cingentia omninoque occultantia. *Flores mares*: capitulum 1·8 cm. longum, 1·5 cm. latum: perianthium glabrum, 5 mm. longum: antherae incurvae. *Flores feminei*: capitulum 2 cm. longum, 1·3 cm. latum, conicum: bractae pubescentes: perianthium glabrum, 5 mm. longum. *Ovarium* ovoideum, 1 mm. longum, glabrum: stylus 4 mm. longus, stigmate vix 1 mm. lato. *Strobilus* 4·5 cm. longus, 3·5 cm. latus. *Germen* atro-brunneum, superne alatum, 1 cm. longum, in parte superiore 1 cm. latum.

Description.—A shrub up to about 3 ft. *Branches* puberulous when young, later becoming glabrous. *Leaves* yellow-green in colour, the lower 7—8 cm. long, 1 cm. wide, glabrous except at the base, the upper pubescent, up to 10 cm. long, 1·5 cm. wide, obtusely pointed, with a tuft of hairs at the tip, narrowing gradually to the widened midrib

at the base, those enclosing the flower heads becoming paler, shorter and narrowing to a rather acute tip. *Male flower heads* completely hidden in the upper leaves, 1.8 cm. long, 1.5 cm. wide, with a few inconspicuous brown involucre scales at the base: bracts very hairy, about 2 mm.

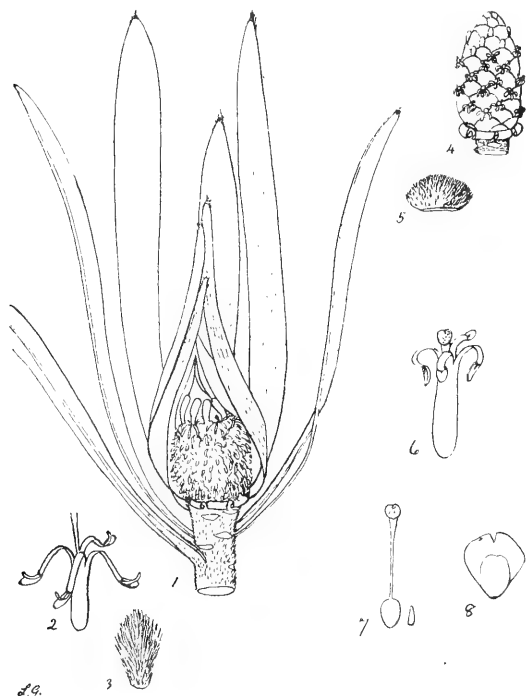


FIG. 1. *Leucadendron cryptocephalum*, L. Guthrie. 1. Male flower head with some of the upper leaves removed, natural size. 2. Male flower $\times 4$. 3. Male bract $\times 4$. 4. Female flower head, natural size. 5. Female bract $\times 2$. 6. Female flower $\times 4$. 7. Gynaecium with hypogynous scale $\times 4$. 8. Seed, natural size. Del. L. Guthrie.

long. *Flowers* 5 mm. long, glabrous, bright yellow when young: the limb about 2 mm. long. *Anthers* linear, curving inwards. *Style* 5 mm. long, glabrous, thickened to a clavate tip. *Female flower heads* hidden, about 2 cm. long 1.3 cm. wide, conical, with a small involucre of glabrous recurved brown scales: bracts minutely pubescent, 4 mm. long, 5 mm. wide. *Flowers* 5 mm. long, glabrous, the exposed free portions of the

perianth segments recurving. *Hypogynous scales* less than 1 mm. long. *Ovary* ovoid, glabrous, about 1 mm. long : style 4 mm. long, thickened gradually towards the apex : stigma flattened, slightly bifid, less than 1 mm. in diam. *Fruiting cone* ovoid, about 4.5 cm. long, 3.5 cm. wide : bracts brownish, up to 1 cm. wide : seed dark brown, winged from above the base, 1 cm. long, 1 cm. wide in the upper part.

Hab. Cape Province : Caledon Div., near the road leading from Caledon to Shaw Mountain, about three miles north of the pass. *L. Guthrie* 115 ; (type in Bolus Herbarium) ; *Salter* 7212. Fl. Mch—April.

This species is most nearly allied to *L. decorum* R.Br., but is a lower growing shrub, always a yellowish green, scarcely changing its appearance at the flowering period. The inflorescences can only be seen when the enfolding leaves are removed. The flowering period is about two months earlier, and the flower heads are smaller. It has so far only been observed in the locality cited.

***Protea caledonensis*, L. Guthrie. (Proteaceae) § Paracynaroideae.**

Planta acaulis, caespitosa. *Folia* aggregata, 12—18 cm. longa, 1 cm. lata, glabra, petiolum breve versus gradatim angustata, marginibus crassis rugosis recurvatis. *Capitulum* 6.5 cm. longum, fere 4.5—6 cm. latum, receptaculo leviter convexo : squamae involucales pubescentes, pallide roseae, obtusae, interiores 4.5 cm. longae, 3—6 mm. latae. *Flores* involucrium breviter excedentes, 5 cm. longi : segmenta utrinque dense pubescentia : labium pubescens, 1.3 cm. longum, aristis 5 mm. longis, breviter penicillatis. *Ovarium* 7 mm. longum, dense villosum : stylus inflexus, glaber, 4.3 cm. longus, ad apicem gracillimus, stigmata terminale minuto.

Description.—*Stems* not exserted, caespitose, leaf-bearing portion above ground 2—5 cm. long. *Leaves* 15—20, 12—18 cm. long, up to 1 cm. wide, narrowing abruptly at the tip, with a short black mucro, tapering gradually below to a short petiole, at first pubescent, soon becoming glabrous, firm and rough in texture, with thickened rugose margins, the midrib prominent below : petiole 2—3 cm. long. *Flower heads* 6.5 cm. long, usually 4.5—6 cm. wide : surface of the receptacle slightly convex : involucreal scales pubescent, ciliate ; the outer brownish in colour, narrowing from the base to the obtuse apex ; the inner pink, linear oblong, about 4.5 cm. long, 6 mm. wide, obtuse ; the innermost narrower, widening slightly towards the tip. *Flowers* shortly exceeding the involucreal scales, about 5 cm. long : perianth sheath, villous without and within except at the expanded base, lip pubescent 1.3 cm. long, three awned, outer awns 5 mm. long, tufted with white and brown hairs. *Anthers* linear, 8 mm. long : connective produced

into a small subacute apical gland. *Hypogynous* scales about 2 mm. long. *Ovary* 7 mm. long, covered with red-brown hairs: style slightly curved 4·3 cm. long, glabrous, tapering gradually to the slender but obtuse tip: stigma terminal, very small.

Hab. Cape Province: Caledon Div., southern slopes of the Swartberg near Caledon. *L. Guthrie* 239 (type in Bolus Herbarium); hills about 3 miles north of Shaw Mountain Pass, *L. Guthrie* 388. Fls. April—June.

This species, when not in flower, resembles both *P. scabra* R.Br., and *P. aspera* Phillips, the flower heads, however, differing considerably. Those of *P. scabra* are smaller with golden brown involucreal scales, and *P. aspera*, to which it is most closely allied, has a considerably larger head, with a very convex receptacle, pallid involucreal scales and a hairy style.

***Pectinaria Mirkinii*, Pillans (Asclepiadaceae—Stapelieae).**

Caules procumbentes vel partim subterranei, 5—10 cm. longi, 0·6—0·8 cm. diam., obtuse tetragoni, dentati, glabri; pedicelli 3 mm. longi; corolla erecta, 1 cm. diam., extra glabra, tubo campanulato 4 mm. longo, fauce 5 mm. diam., intra minutis papillis, atropurpureo, lobis 4 mm. longis, deltoideis, acutis, patulis, apice leviter recurvis, supra minutissimis papillis, pallide luteis, basi et apice fusco-purpureis; corona exterior lobis 5, oblongo-lanceolatis, obtusis, 0·5 mm. longis, patulis, luteis: corona interior lobis incumbentibus, oblongis, obtusis, luteis, prope basin crista horizontaliter patente.

Description: *Stems* procumbent or partly subterranean, 5—10 cm. long, 0·6—0·8 cm. square, obtusely 4-angled, with channelled sides and small deltoid teeth on the angles, glabrous, dull green. *Flowers* in clusters of about 4 at the middle of the sides. *Pedicels* 3 mm. long, spreading, glabrous. *Sepals* 1·5 mm. long, ovate, acuminate. *Corolla* erect, 1 cm. wide across the lobes, glabrous on the outer surface. *Tube* 4 mm. deep, 5 mm. wide at the mouth, campanulate, somewhat pentagonal at the mouth, dull purple-brown on the outer surface, deep purple-brown and minutely papillate on the inner surface, each papilla tipped by a short hair. *Lobes* 4 mm. long, deltoid, acute, spreading, slightly recurved at the tips, pale on the outer surface; inner surface very minutely papillate, cream coloured, deep purple-brown across the base, with a purple-brown patch at the apex. *Outer corona* 2·5 mm. diam., composed of 5 very broad-based oblong-lanceolate, obtuse, spreading lobes 0·5 mm. long, egg-yellow. *Inner corona-lobes* incumbent upon the anthers and shortly exceeding them, oblong, obtuse, egg-yellow, with a purple patch on each side at the base, produced into a prominent tubercled boss at the base.

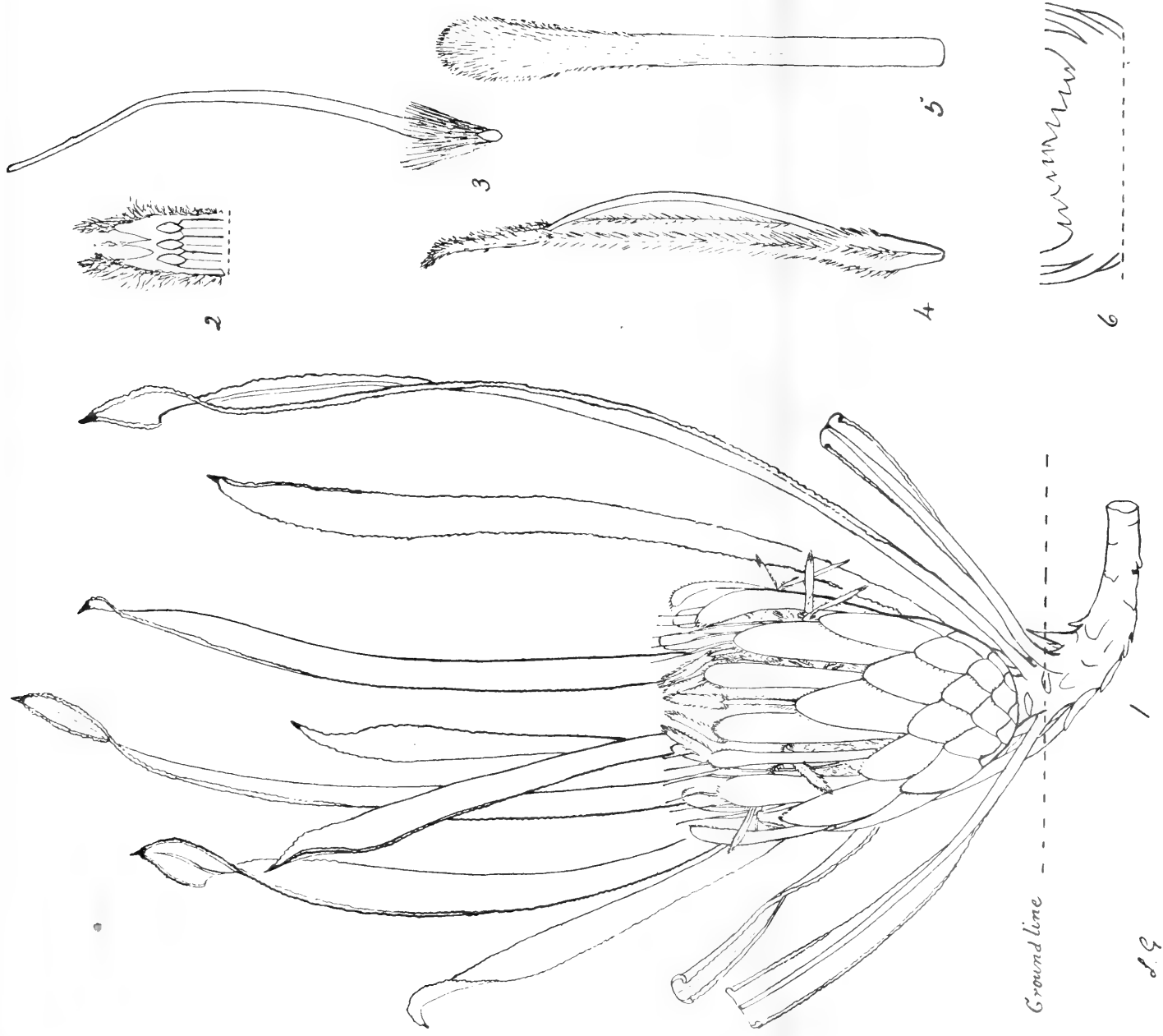
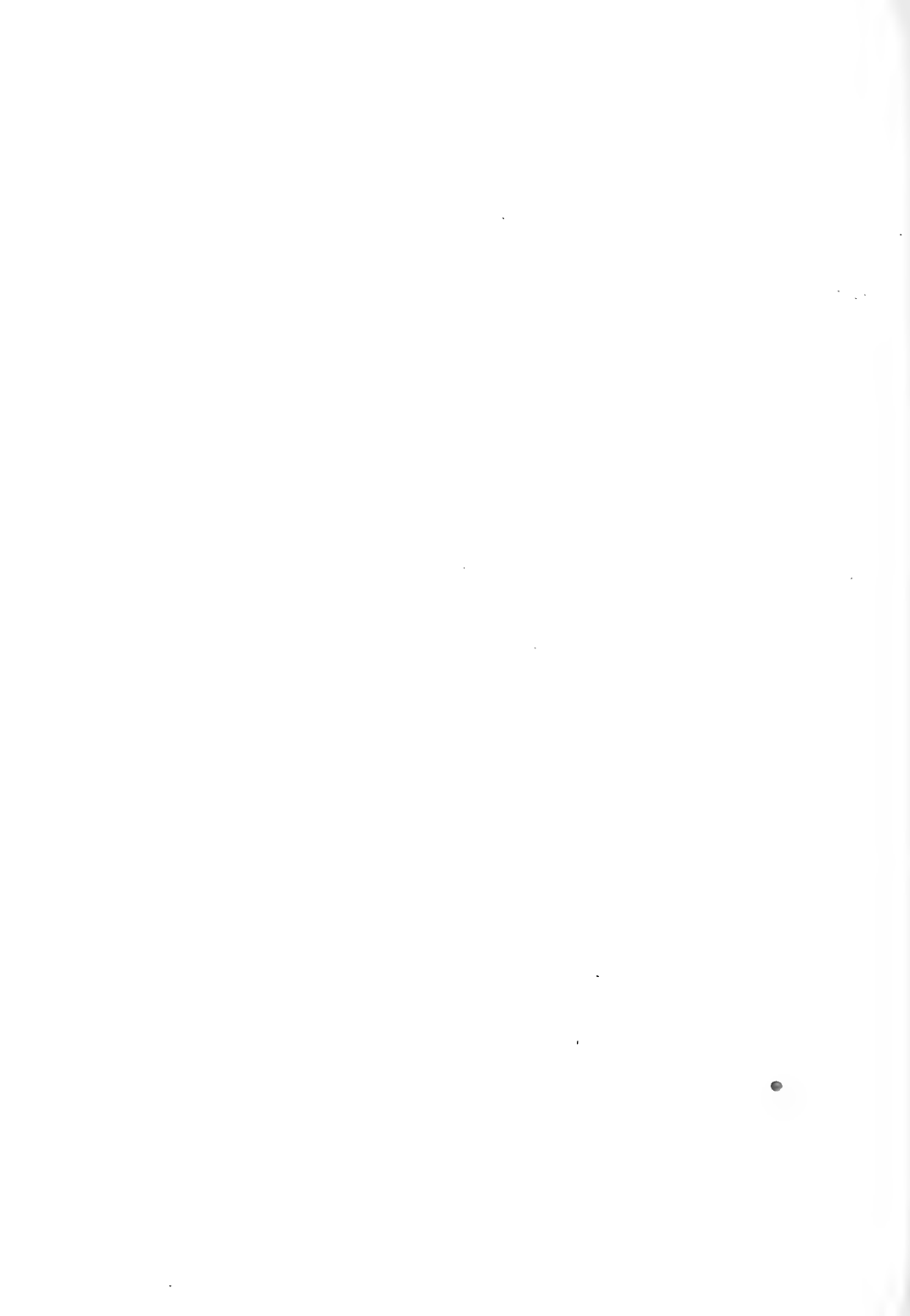


FIG. 2. *Protea caledonensis*, L. Guthrie. 1. Plant with leaves removed, natural size. 2. Upper portion of lip, enlarged. 3. Gynaeceum $\times 2$. 4. Flower bud $\times 2$. 5. Inner involucre scale $\times 2$. 6. Upper surface of receptacle $\times 2$. Del. L. Guthrie. *Journal of S.A. Botany*. (To face p. 64.)



Hab. Cape Province : Steytlerville, *L. Mirkin* (in Bolus Herbarium 22432).

While having a close affinity in stems and corona with *P. arcuata* N.E. Br. the present species differs from all others in the genus by its free, spreading and slightly recurved corolla-lobes.

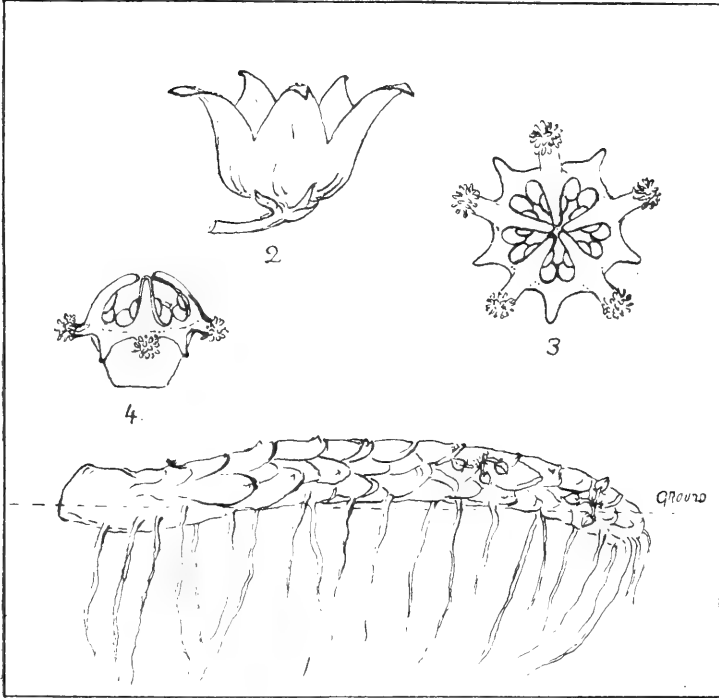


FIG. 3. *Pectinaria Mirkinii*, Pillans. 1. Stem, natural size. 2. Corolla $\times 4$. 3. Corona $\times 10$. 4. Corona $\times 8$. (Bolus Herb. 22432.) Del. B. O. Carter.

Huernia Longii, Pillans (Asclepiadaceae—Stapelieae).

Caules 3—5 cm. longi, ca. 0.8 cm. diam., 6—8-angulati, angulis in areolas medio apicula notatas divis; pedicellis 5 mm. longis; corolla 1.8—2 cm. diam., pallide lutea, purpureo maculato, tubo campanulato, 6 mm. longo, supra medium papillis, lobis 7 mm. longis, deltoideis, acuminatis, papillois; corona exterior lobis 5, subquadratis atropurpureis; corona interior lobis 2 mm. longis, lineari-lanceolatis, obtusis, ad medium conniventibus, superne divergentibus atropurpureis.

Description: Stems tufted, erect, 3—5 cm. long, about 0·8 cm. diam., 6—8-angled, glabrous, dark green or purplish: angles 2 mm. wide, tessellately divided into obtuse, apiculate tubercles. *Flowers* produced near the base of young stems: pedicels 5 mm. long, glabrous: sepals 4—4·5 mm. long, lanceolate, acuminate, glabrous slightly recurved at the apex: corolla 1·8—2 cm. diam., glabrous on the outer surface, dull creamy yellow mottled with crimson on the inner surface, minutely spotted on the lower half of the tube: tube campanulate, 6 mm. long and wide, closely studded on the upper half within with elongated, slightly tapered papillae: lobes spreading, recurved towards the apex, 7 mm. long, 5 mm. diam., deltoid, acuminate, covered on the inner surface with columnar, very obtuse papillae tipped with a minute hair: outer corona-lobes subquadrate, rounded at the apex, dark purple-brown: inner corona-lobes 2 mm. long, connivent-erect, with slightly diverging tips, linear-lanceolate, obtuse and minutely scabrous at the apex, dorsally compressed, dark purple-brown.

Hab. Cape Province; Uitenhage Div., near Groendal, *F. R. Long* 1154 (in Bolus Herbarium).

The affinity of this species is doubtful. The corolla and corona resemble those of *H. Pillansii*, N. E. Brown, but the stems are very different. The material used for the present description was grown by Mr. David Pringle, Port Elizabeth, in April, 1939. (Plate 6.)

***Aloe ramosissima*, Pillans (Liliaceae—Aloineae), § Dracaloae.**

Frutex e basi copiose ramosus, 2—3 m. altus. *Rami* supra basin ca. 8 cm. diam. *Folia* ca. 12, dense rosulata, 13—25 cm. longa, 1·7—2·7 cm. lata, lanceolato-linearia vel lineari-oblonga, obtusa, supra planiuscula vel leviter concava. *Pedunculus* brevis, trifurcatim ramosus; racemi 10—15 cm. longi, 15—20-flori; bracteae ca. 5 mm. longae, deltoideae, acuminatae, scariosae; pedicelli 7—8 mm. longi, erecto-patentes; perigonium 30—40 mm. longum, ventricosum-cylindraceum, basi rotundatum; segmenta oblonga, obtusa, exteriora basi connata, apice leviter recurvula, interiora longiora. *Genitalia* distincte exserta.

Description: Plants copiously and dichotomously branched from the ground level, usually about 2 m. high at maturity, occasionally attaining to 3 m., measuring about the same in breadth as in height. *Branches* ascending or diverging, about 8 cm. thick on the lower parts of the plant, about 2 cm. thick on the upper, leafless except at the apices, smooth, covered with waxy, grey powder. *Leaves* about 12 in a rosette, crowded, spreading or slightly decurved, 13—25 cm. long, 1·7—2·7 cm. wide and 0·5—0·8 cm. thick at the middle, lanceolate-linear or linear-oblong, obtuse, flat or slightly concave on the upper surface, glaucous-green,

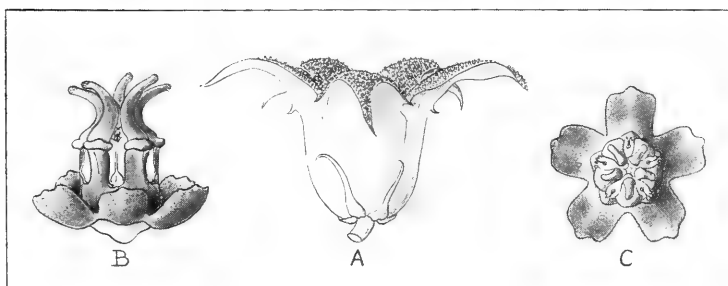
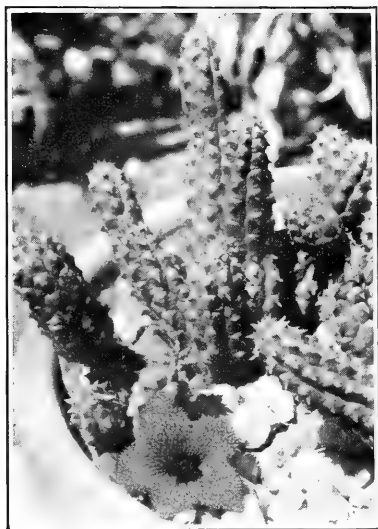


PLATE 6. *Huernia Longii*, Pillans.

FIG. 1. Photograph taken by Mr. D. Pringle, Port Elizabeth, of *Long* No. 1154, natural size.

FIG. 2. A. Flower, side view $\times 3$. B. Corona, side view $\times 6$. C. Corona, front view $\times 6$. Del. W. F. Barker.

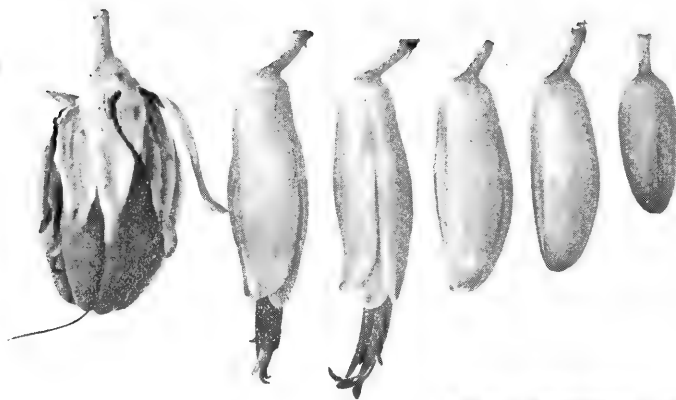


FIG. 3.



FIG. 2.

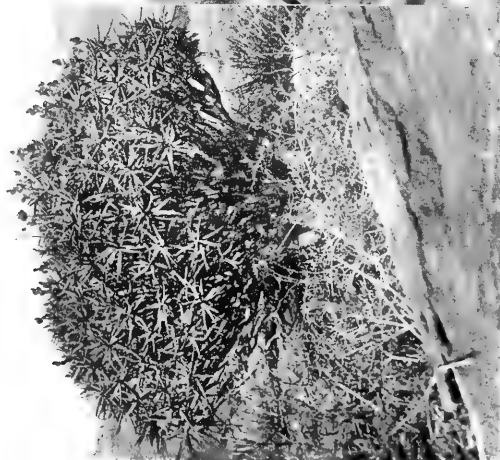


FIG. 1.

- FIG. 1. An adult plant at the top of Hells Kloof, Namaqualand. (Photograph taken by Mr. G. W. Reynolds of his No. 2551 in July, 1937.)
- FIG. 2. A flowering branch, gathered between Amisfontein and Hells Kloof. (Photograph taken by Mr. G. W. Reynolds of portion of his No. 2547 in July, 1937.)
- FIG. 3. Buds, flowers and fruit, showing natural size. (Photograph taken by Mr. G. W. Reynolds of portion of his No. 2547 in July, 1937.)

PLANT 7. *Alor ramosissima*, Pillans.

with pale yellow, minutely toothed, cartilaginous margins. *Inflorescence* 15—20 cm. long, erect, with 1 or 2 branches near the base. *Racemes* about 20-flowered, the terminal 12—15 cm. long, the lateral variously shorter. *Bracts* about 5 mm. long, deltoid, acuminate, cuspidate, membranous, 1-nerved, whitish. *Pedicels* 7—8 mm. long, erect-spreading. *Perianth* 30—40 mm. long, ventricose-cylindric, yellow, slightly declinate: outer segments oblong, obtuse, about 8 mm. wide, faintly nerved, connate at base into a tube about 8 mm. long; the 2 upper slightly spreading at the apices: inner segments free, very shortly exceeding the outer, oblong obtuse, greenish yellow, with 3 green nerves, pale and membranous at the margins. *Stamens* with about 12 mm. of their length exserted. *Ovary* about 6 mm. long, elliptical. *Style* with about 12 mm. of its length exserted. *Capsule* 30 mm. long, 18 mm. wide at the middle.

Hab. Cape Province: Namaqualand: hills between Bushman's Bank and Sendlings Drift, *Pillans* 5505; between Annisfontein and Hells Kloof, *Reynolds* 2547 (*type* in Bolus Herbarium); Hells Kloof, *Reynolds* 2550; near Hells Kloof, *Reynolds* 2548: top of Hells Kloof, *Reynolds* 2551, 2552.

This species is reported to occur on the mountain at Kubus in the Richtersveld, between Steinkopf and Viols Drift, and on the mountains north of the Orange River in South-West Africa. Its obvious affinity is with *A. dichotoma* from which it is distinguished by the constant habit of branching from the ground level, and by its smaller rosettes of smaller leaves. In the flowers, however, there does not appear to be any character which can be satisfactorily used for distinction.

My thanks are due to Mr. G. W. Reynolds for permission to use the ample notes which he made in the field and to publish the accompanying photographs of his Nos. 2547 and 2551 taken by him in July, 1937. (Plate 7.)

***Oxalis pendulifolia*, Salter. (Oxalidaceae.) § Lineares.**

Planta erecta ad 30 cm. alta, caule longo exserto. *Bulbus* late subuloides, fere 4 cm. longus, apice valde acutus, radice contrahendi, tunicis tenuibus satis pallide brunneis, praecipue in parte superiore lanatis et undulatis. *Rhizoma* longum, pubescens. *Caulis* rigidus, 7—30 cm longus, in parte inferiore pubescens, squamis nonnullis indutus, interdum ramulis brevibus vel foliis paucis instructus. *Folia* 6—12, ad caulis apicem plerumque aggregata: petioli filiformes, adscendentes, sparse pubescentes, 2—3 cm. longi: foliola 3, plus minusve pendula, breve petiolulata, linearia vel oblonga vel rare obcordata, apice minute incisa, conduplicativa, leviter falcata, supra glabra, infra sparse pubescentia, 1—1.5 cm. longa, callis parvis numerosis aurantiacis copiose notata.

Pedunculi uniflori terminales, vel unus e squama caulina superiore exorians, 3—4 cm. longi, glabri vel sparse villosi, in dimidio superiore

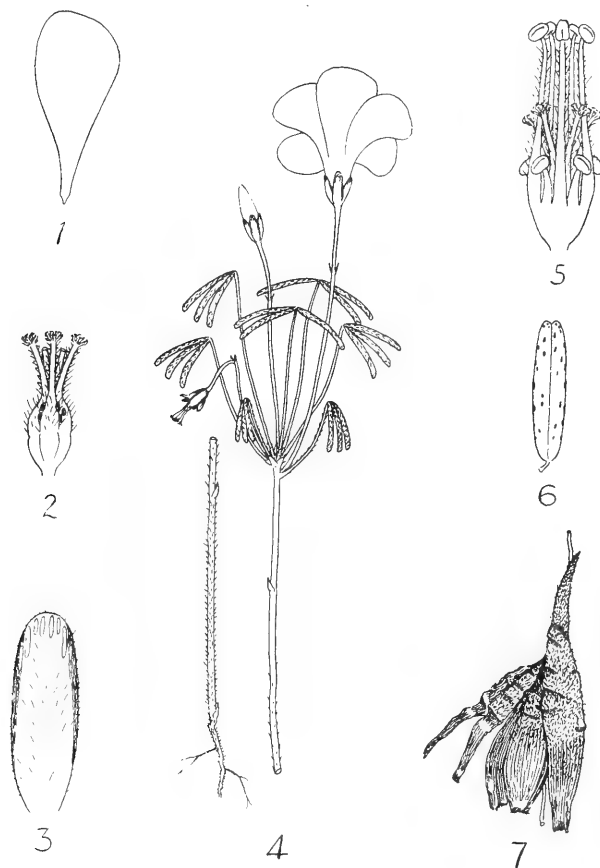


FIG. 4. *Oxalis pendulifolia*, Salter. 1. Petal $\times 1\frac{1}{2}$. 2. Gynaecium $\times 5$. 3. Sepal $\times 6$. 4. Plant, natural size. 5. Androecium $\times 5$. 6. Leaflet, upper side $\times 2$. 7. Bulb tunics after the new bulb has been drawn down by the contractile root, natural size. Del. T. M. Salter.

articulati, bracteis 2 subulatis, callosis, oppositis. *Sepala* oblonga, obtusa inaequalia, 4—6 mm. longa, purpureo-marginata, sparse pubescentia ciliata, callis 6—10 linearibus, aurantiacis, ad apicem ornata. *Corolla*

glanduloso-viscida, ad 2 cm. longa, laete miniato-rubra, tubo viridescente: petala subcuneata, basin versus attenuata, apice oblique rotundata. *Filamenta* longiora 6·5—7 mm. longa, edentata, pilis simplicibus capitatisque obtecta. *Ovarium* 2 mm. longum, in dimidio superiore pubescens et callis rubris ornatum, loculis 2—3-ovulatis: styli pilis simplicibus capitatisque pilosi.

Hab. Cape Province: George Div., George, *Schlechter* 2294 (type in Bolus Herbarium); Montagu Pass, *Salter* 3164; Knysna Div., Belvedere, *Duthie* 780; Plettenberg (?) Bay, *Mundt*; 7 miles east of Woodville, *Salter* 6919. Fl. Feb.—Mch.

This early flowering species has been confused with *O. punctulata* R. Knuth, of which the type (*Bachmann* 87 from Hopefield district!) is a form of *O. versicolor*, L. *O. pendulifolia*, which has a contractile root, an elongate hairy bulb and an articulated peduncle, belongs to an entirely different group in the genus and is a close affinity of *O. duriuscula*, *Schlechter*, differing from that species in its pubescent green, not polished brown stem, obtuse sepals with numerous apical calli and longer filaments.

The description and drawing of the floral characters have been made from *Salter* 6919 which has recently flowered in cultivation at the Nat. Bot. Gardens at Kirstenbosch, but *Schlechter* 2294, specimens of which are already in several herbaria, has been chosen as the type. The flower is red, rather inclined towards brick-colour, with a greenish tube.

I am indebted to the Director of the Berlin Herbarium for the loan of the type of *O. punctulata*.

Oxalis stellata, E. and Z. var. ***glandulosa***, *Salter* (Oxalidaceae) § Cernuae.

A forma typica differt:—*Planta* umbratica, gracilior laxior. *Bulbus* minor, fere 1·5 cm. longus, breviter rostratus. *Caulis* exsertus, interdum ramosus. *Foliola* ad medium vel paulum ultra bilobata, lobis obtusis. *Pedunculi* terminales vel interdum unus e squamae caulinae axilla exoriens, saltem in parte superiore, sicut pedicelli et calyx glanduloso-pilosi: pedicelli 2—3. *Corolla* minor, 1·1—1·3 cm. longa, alba vel pallide violacea, tubo sordide viridescente: petala angustiora, spathulato-cuneata.

Hab. Cape Province: Caledon Div., in rather shady places by a stream about 11 miles west of Caledon, *Salter* 2397 (type in Bolus Herbarium) 3310, 3312, 7214; Ceres Div., Mitchell's Pass, *Salter* 2099; Swellendam Div., near Barrydale, *Salter* 2330; Cape Peninsula, east slope of Swartkop, *Pillans* 8882, *Salter* 8078.

A much more lax and slender plant than the typical *O. stellata*, differing chiefly in its less deeply lobed leaflets, glandular peduncles,

petioles and sepals, smaller bulb and flowers and narrower petals. It is separable from *O. caprina*, L. (which is closely related to *O. stellata*) by the well exerted stem, narrower lobes on the leaflets and also by the glandular hairs referred to above. The species or group *O. stellata*—*O. caprina* is distinguished in the section by its small rostrate bulb.

Indigofera nitida, Salter. (Leguminosae—Papilionatae.)

Planta diffusa grisea, ad 40 cm. alta, pilis minutis hyalinis dense strigosa. *Caules* ad basin sublignosi, superne herbacei, sicut rami angulares. *Stipulae* subulatae, apicibus reflexis. *Folia* alternata, digitate trifoliolata, petiolis foliolis fere aequantibus: foliola sessilia, lanceolata, 1.5—2 cm. longa, utrinque pilis binatis, prope latitudinaliter tendentibus strigosa, apice apiculata, subtus nervo medio conspicuo. *Pedunculi* axillares, elongati, folia excedentes: racemi plus minusve compacti, multiflori, post anthesin modice elongati: bractae subulatae, caducae, 4—7 mm. longae: pedicelli fere 1.5 mm. longi. *Flores* miniato-rubri. *Calyx* 4—5 mm. longus, sicut petiolus albo-sericeus, lobis 3 inferioribus lanceolatis, plus minusve attenuatis, 2 lateralibus paulum brevioribus, sinu superiore satis lato. *Vexillum* orbiculare, vix unguiculatum, minute puberulum, basin versus purpurascens 0.8—1 cm. longum, carina erecta acuta aequans, quam alae latae paulum brevius. *Antherae* ovoideae, apiculatae. *Ovarium* 7—8-ovulatum, stylo superne angulato. *Legumen* pendulum, sericeum.

Hab. Cape Province: Cape Peninsula; roadsides near Constantia Nek. Salter 7854 (type in Bolus Herbarium) 7801, Wolley-Dod 3355; Lion's Mt. E. & Z. 1575 (*I. candicans*, Ait.), Bolus 9347; Table Mt., Bolus 2778; Roodebloem, Zeyher 4883; near Hout Bay, Salter 7658; Raapenberg, Guthrie 604; Wynberg Hill, Kensit (*Levyns* 6851); Devil's Peak, Page (*Levyns* 6852); Kirstenbosch, L. Bolus (*Levyns* 6853). Flowers Sep.—Nov.

This species is fairly plentiful in the Cape Peninsula and seems to have been confused with both *I. psoraloides*, L. and *I. candicans*, Ait. It differs from the former in its greyish silvery colour, shorter recurved stipules, larger flowers and shorter and broader racemes and in its more equal calyx lobes, the 3 lower lobes in *I. psoraloides* being twice as long as the 2 lateral. *I. candicans*, which does not occur in the Cape Peninsula, has proportionately longer petioles, more obtuse leaflets and much smaller stipules and flowers. Further *I. nitida* can easily be distinguished from both these species by the more dense glossy indument and by the arrangement of the hairs on the leaflets, the minute binate strigose hairs lying almost horizontally instead of nearly vertically.



Indigofera filifolia, Th., var. **minor**, Salter. (Leguminosae—Papilionatae).

A forma typica differt:—*Planta* erecta, 40—80 cm. alta, omnino minor, sparse ramosa. *Folia* paucula, stipulis lineari-lanceolatis 2—3 mm. longis. *Racemi* graciles, fere 10—16-flori. *Calyx* 2·5—3 mm. longus, lobis ovato-lanceolatis vel lanceolatis. *Vexillum* 6—7·5 mm. longum, alis aequans. *Ovarium* fere 8-ovulatum.

Hab. Cape Province: Cape Peninsula; marshy ground near Modderdam, Salter 7875 (*type* in Bolus Herbarium), 5751, 7606, 7874; plateau between Constantiaberg and Noord Hoek Peak, Levyns 6848; Constantiaberg, Schlechter 1469; near Smitswinkel, Compton (Levyns 6850).

This small variety has been under observation for some years, for it was at first suspected that it might prove to be a depauperised or epharmonic form of the typical *I. filifolia*, a robust densely branched shrub often 3—6 ft. high, which has the virgate habit of the European Broom (*Cytisus scoparius*, Link.). The peaty marsh near Modderdam, one of the localities in which this plant occurs, has not been burnt for a good many years and yet the plants have never attained the size and characters of the typical form.

The chief differences between the variety *minor* and the large typical form are shown in the following table:—

	Typical form.	Var. minor.
Flowering season	Feb.—Apl.	Sep.—Feb.
Height	1—1·5 metres. . . .	40—80 cm.
Habit	Bushy, copiously branched.	Slender, sparsely branched.
Racemes	Usually 20—30-flowered.	Usually 10—16-flowered
Leaves	Fairly numerous. . .	Few.
Stipules	Filiform or subulate, 1 mm. long.	Narrow-lanceolate, 2—3 mm. long.
Calyx	3—5 mm. long. . . .	2·5—3·5 mm. long.
Standard	8—11 mm. long. . . .	6—7·5 mm. long.
Ovary	11—12-ovuled. . . .	Usually 8-ovuled.
Legume	4·5—5·5 cm. × 4 mm.	3—4 cm. × 3·5 mm.

Cyclopia capensis, Salter. (Leguminosae—Papilionatae.)

Fruticulus erectus, saepe 30—50 cm., rare ad 1·5 m. altus, ramis ligneis virgatis adscendentibus. *Rami* glabri, castanei, politi, plerumque

efoliati: ramuli juniores ad apicem foliati, sparse cano-villosi, pallide luteo-brunnei, sicut rami, annorum praeteritorum petiolis persistentibus fere 1 mm. longis, infra glabris, supra et in axillis cano-pilosis induti. *Folia* trifoliolata, erecto-patentia: foliola linearia, mucronulata, glabra, plerumque 1—1.5 cm. longa, 1—1.5 mm. lata, marginibus revolutis itaque subtus canaliculata, petiolulis fere 1.5 mm. longis, sordide luteclis. *Flores* solitaires, axillares, laete flavi, omnino glabri, saepe 4—9 in racemis brevibus congestis terminalibus. *Pedunculi* 4—7 mm. longi, bracteis 2 basalibus, ovato-lanceolatis, acutis, semiamplexicaulibus, sub-conduplicativis, saepe persistentibus. *Calyx* laterale compressus, basi valde concavus, tubo 2 mm. longo, lobis apiculatis, 4 superioribus late lanceolatis falcatis, 6—7 mm. longis, inferiore paulum longiore, sub-conduplicativo, incurvo. *Vexillum* abrupte recurvum, breviter unguiculatum, lamina orbiculata, carinata, 1.5—1.7 cm. longa et lata, apice emarginata, minute cuspidata. *Alarum* laminae sub-hemisphaericae, apice obtusae, interne saccis conspicuis basin versus instructae, unguo obliquo acute inflecto. *Carina* valde fornicata, rostrata, saccis lateralibus prominentibus basin versus instructa. *Ovarium* planum, sessile, lanceolatum, glabrum, 5-ovulatum, stylo fornicato. *Legumen* erectum, fere 2.5 cm. longum.

Hab. Cape Province: Cape Peninsula; near Kanonkop, Paulsberg Range, *Salter* 8035 (type in Bolus Herbarium); flats west of Paulsberg, *Salter* 7170, 8036; near Smith's Farm, *Thorne* (S.A. Mus. 52162); near Sirkels Vlei, *Levyms* 6847; near Olifants Bosch, *Pillans* 8874; Red Hill *Levyms* 5618, *Penfold* (S.A. Mus. 52809). Fl. Feb.—Apl.

This species is in some respects intermediate between *C. genistoides* (L.) Vent. and *C. galioides* (Berg.) D.C. It is distinguished from the former by its rather larger flowers, emarginate standard with a minute cusp, the very prominent persisting hairy petioles and by the absence of the white-woolly ciliation on the calyx lobes. Further it flowers from Feb.—Apl. whereas *C. genistoides* flowers from Sep.—Nov. It is a more slender plant than *C. galioides* with narrower and paler green leaflets and it is without the dense smoky-grey indument on the branches and the basal overlapping of the calyx lobes which are characteristic of that species.

It is by no means rare in the southern part of the Cape Peninsula, usually occurring in open places. Mr. N. S. Pillans records a plant growing to 5 ft. in height near Olifants Bosch, but, like most species of *Cyclopia*, it appears to be slow-growing and probably only reaches its full development but rarely, owing to the periodic burning of the veld. After fires it assumes an entirely unnatural habit, for numerous radiating stems arise from the old roots and form a dome-shaped plant about 1 ft. high and as much or more in diameter and it is in this state that it is commonly found.

It was first brought to my notice by Professor R. H. Compton who pointed out that it differed from the two species referred to above and appeared to be an unnamed plant.

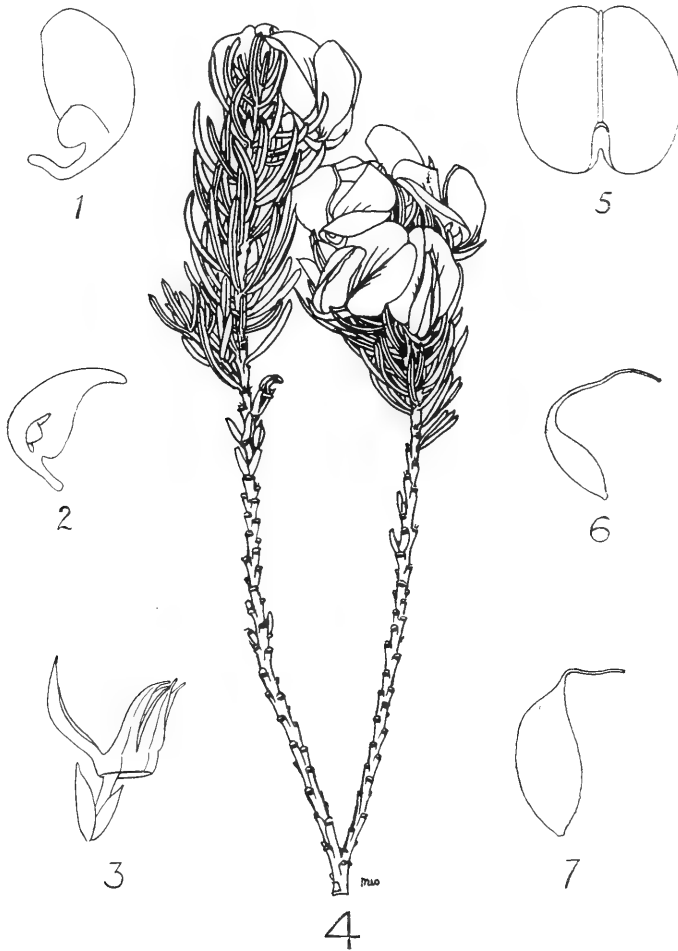
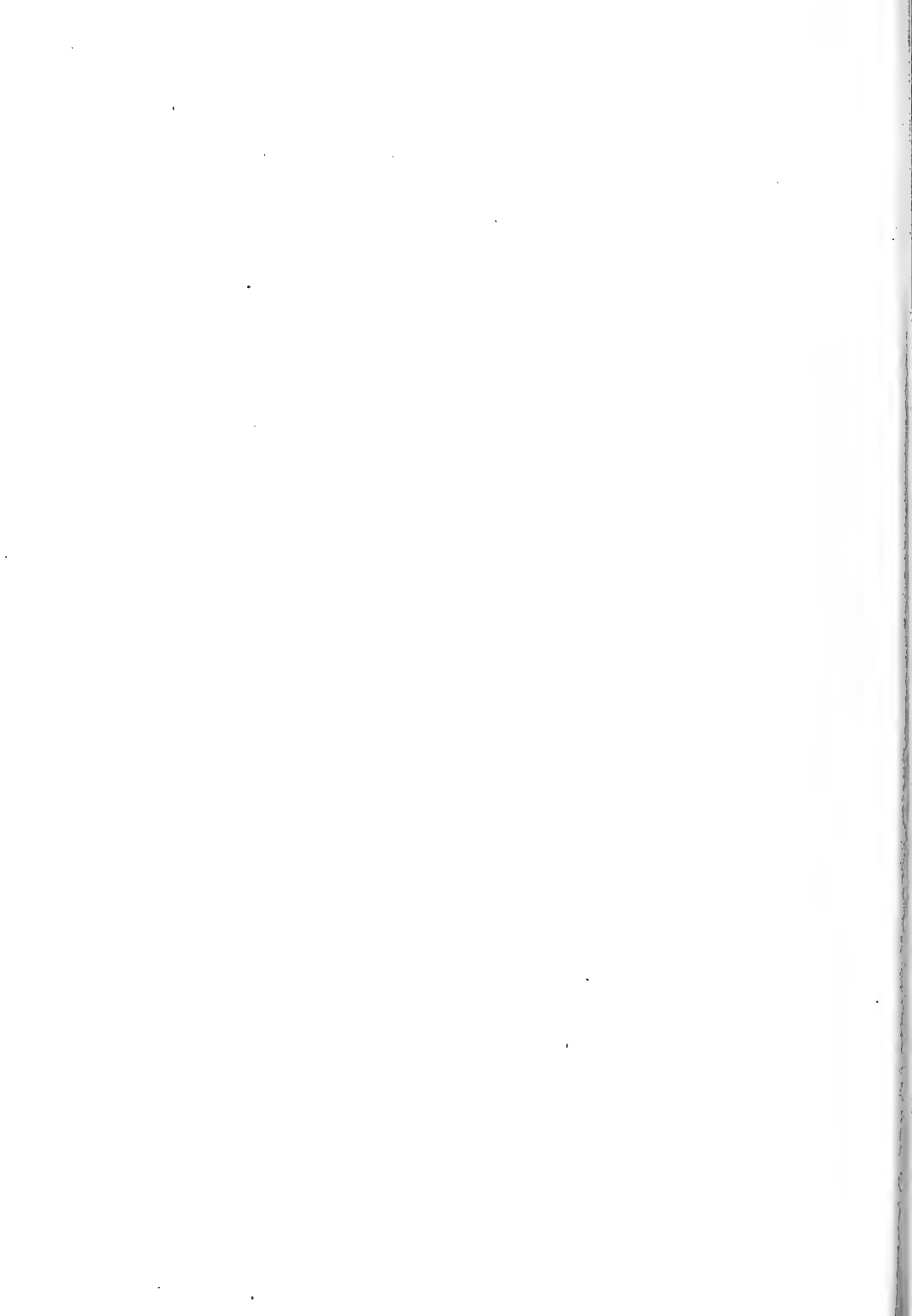


FIG. 5. *Cyclopia capensis*, Salter. 1. Ala $\times 1\frac{1}{2}$. 2. Carina $\times 1\frac{1}{2}$. 3. Calyx $\times 1\frac{1}{2}$. 4. Flowering branch, natural size. 5. Vexillum $\times 1\frac{1}{2}$. 6. Ovary $\times 1\frac{1}{2}$. 7. Legume, natural size. Del M. Walgate and T. Salter.



A PHENOMENAL DRIFT OF SEAWEED IN FALSE BAY.

By Miss M. A. Pocock. Ph.D.

The drift of seaweed on South African coasts has hitherto received little or no attention. No scientific observations as to its composition, bulk or seasonal nature have been made, nor has there been any attempt to utilise the masses of seaweed thrown up on our shores, although in many other parts of the world seaweed is regarded as a valuable fertilizer for arable land and the drift is eagerly sought by the local farming community.

Normally the amount thrown up on the beaches of the Peninsula is not very great, but every now and then, most often about the time of one of the equinoctial spring tides, a great mass of seaweed is cast up, covering the beach with a thick layer of weed. This is left to rot on the beach, or if so great that the rotting mass becomes offensive, is carted away by the Municipality and buried. Hitherto this has happened perhaps once or twice a year in Table Bay on the stretch of Woodstock beach lying between Misplon's boat-building sheds and the end of the esplanade, while in False Bay a similar drift (though differently constituted) occurs occasionally on the Muizenberg beach between the station and the Pavilion, and also to some extent at Strandfontein.

Towards the end of March of this year paragraphs began to appear in the daily press concerning a drift of "green seaweed" which first made itself evident on the beach east of Simonstown. Thence it progressed first to Glencairn, then to Fish Hoek, and on to Muizenberg, obviously following the drift which sets in round the western shores of the bay and moves on first eastward and then southwards towards Cape Hangklip. Unfortunately the last week in March, when these notices in the daily papers began to appear, was a particularly busy one and no examination of the seaweed was made. On the morning of Sunday, April 2nd, however, a visit was paid to Muizenberg to see what exactly was being cast up, the Press description of "green weed and sea-grass" being obviously inadequate, if not inaccurate. This morning proved to

be the climax of the drift which was quite phenomenal, and larger than any remembered to have occurred on that beach for very many years. From the rocks below the station to about the middle of the pavilion the beach was covered, in parts to a depth of nearly three feet, with a continuous mass of seaweed: the sea was discoloured with it far out into the breakers and each wave of the in-coming tide brought in a fresh mass of seaweed. The first April spring tide was approaching and the previous tides had been high ones so, not only did the drift cover the beach in front of the first row of bathing boxes, but it extended under them, finally ending against the banked-up sand between the two rows of boxes.

The constitution of the drift was interesting. The great bulk of it consisted of a green seaweed, a species of *Ulva*, possibly *Ulva lactuca*, thin in consistency and very fragmentary, full of holes where it had been eaten away by small gastropods, but nevertheless very resistant and lasting a long time in water. It was this seaweed which gave the dominant green colour to the mass of drift-weed, but mixed with it were many other seaweeds, not only green but also brown and red, one of the latter, *Nemastoma lanceolata*, being particularly abundant and forming vivid scarlet patches in the green mass. This, a deep water form which is usually a comparatively rare find among drift-weed, was easily the most striking constituent of the drift. It is occasionally found cast up not only in False and Table Bays, but also along the west coast, for instance, at Melkbosch, Kommetje and Maclear's Beach; here, however, there were hundreds of plants of all sizes, up to ribbon-shaped fronds a metre and a half in length by ten to twelve centimetres or more broad, while other plants consisted of two to four fronds arising palmately from a broad somewhat triangular base.

Among the green seaweeds were no less than five species of *Codium*, the most abundant and conspicuous being the large *Codium Lindenbergii*, much of it furred with red patches of a small epiphytic alga, a species of *Rhodochorton*, while other fronds were covered with another red epiphyte, *Placophora*. The curious and fascinating *Codium Bursa* was also well represented.

Brown seaweeds were not abundant; although here and there one was found, no species was present in any quantity. Perhaps the least rare was *Dictyota naevosa*.

Among the reds, after *Nemastoma* the most abundant were various species of *Plocamium*, the most outstanding being *P. corallorhiza* and a very beautiful species, possibly *P. nobile*. *Delisea Suhrii*, very rarely found in False Bay, also occurred, and *Chondrococcus* also was present in some quantity.

A list of the species noted is appended, but it must be emphasised that this is by no means exhaustive—a more thorough examination of the drift than was possible in the time available would undoubtedly have yielded many more species. Many of the forms mentioned were collected as one or two specimens only while others were present in large numbers, and still others again were for one reason or another not collected at all and may have been omitted from the list. Where possible, the relative abundance of each species is indicated ; if no remark is made the species, though present, was not seen in any great quantity.

In addition to the seaweed, the mass of drift included quantities of animal remains which perhaps serve to indicate, even more than the plants, the strength of the ground swell or other disturbance which had torn the mass of attached weed from the sea bottom—various kinds of fish, including “Sucker” fish (*Chorisochismus dentex*), Klipfish (*Clinus superciliosus*), such as are caught on the submerged reefs off shore, young Skates (*Raja* sp.), Skate- and Shark-eggs, masses of *Sepia* eggs, Red Bait, Polyzoa, Sponges, a compound Aecidian on *Epymenia*, Mussels (*Mytelus*), *Patella compressa*, etc.

So thick was the drift that municipal employees were busy clearing paths to give access to the bathing boxes, and carting masses away. The following day, in spite of this continued removal of drift there was still a thick covering of weed on the beach and it had moved along, at midday extending beyond the pavilion. By Tuesday evening there were large patches of weed beyond the pavilion below the esplanade while from the pavilion to the station steps the beach was white once more with only occasional patches of drift-weed, but the level had risen—the remains of the seaweed being buried under a covering of sand washed up by the spring tide. Beneath this cover of sand must have been a considerable mass of decaying seaweed, judging from the smell and from the fact that on walking across the beach, one sank in in places above the ankles, and this despite the continual carting away of great masses of seaweed throughout Sunday, Monday and Tuesday morning.

The origin of the drift weed would appear to be local, in great part if not entirely, since all the species noted have been recorded for False Bay, although some are rare in this locality. The previous week there had been an unusually violent South-easter (unusual for this time of year), reaching 60 miles per hour with occasional gusts rising to 80 miles per hour. It had lasted for two days and was then followed by light North-westerly winds. It seems possible that this, possibly coupled with some other factors, had caused a strong ground swell resulting in considerable disturbance in the shallow waters of False Bay and thus giving rise to this spectacular drift of seaweed. What the contributory factors

may be, whether a seasonal condition of the plant growth in this locality or purely climatic awaits investigation.*

SEAWEEDS NOTED IN THE DRIFT.

CHLOROPHYCEAE.

<i>Ulva</i> ? <i>lactuca</i> L.	Very abundant.
<i>Codium</i> <i>Lindenbergii</i> Bind.	Abundant.
.. <i>Stephensiae</i> Dick	
.. <i>Bursa</i> Ag.	
.. <i>Duthiae</i> Setch.	
.. <i>fragile</i> (Suring) Hariot	
<i>Bryopsis</i> <i>myosuroides</i> Kütz.	
<i>Caulerpa</i> <i>ligulata</i> Harv.	

PHAEOPHYCEAE.

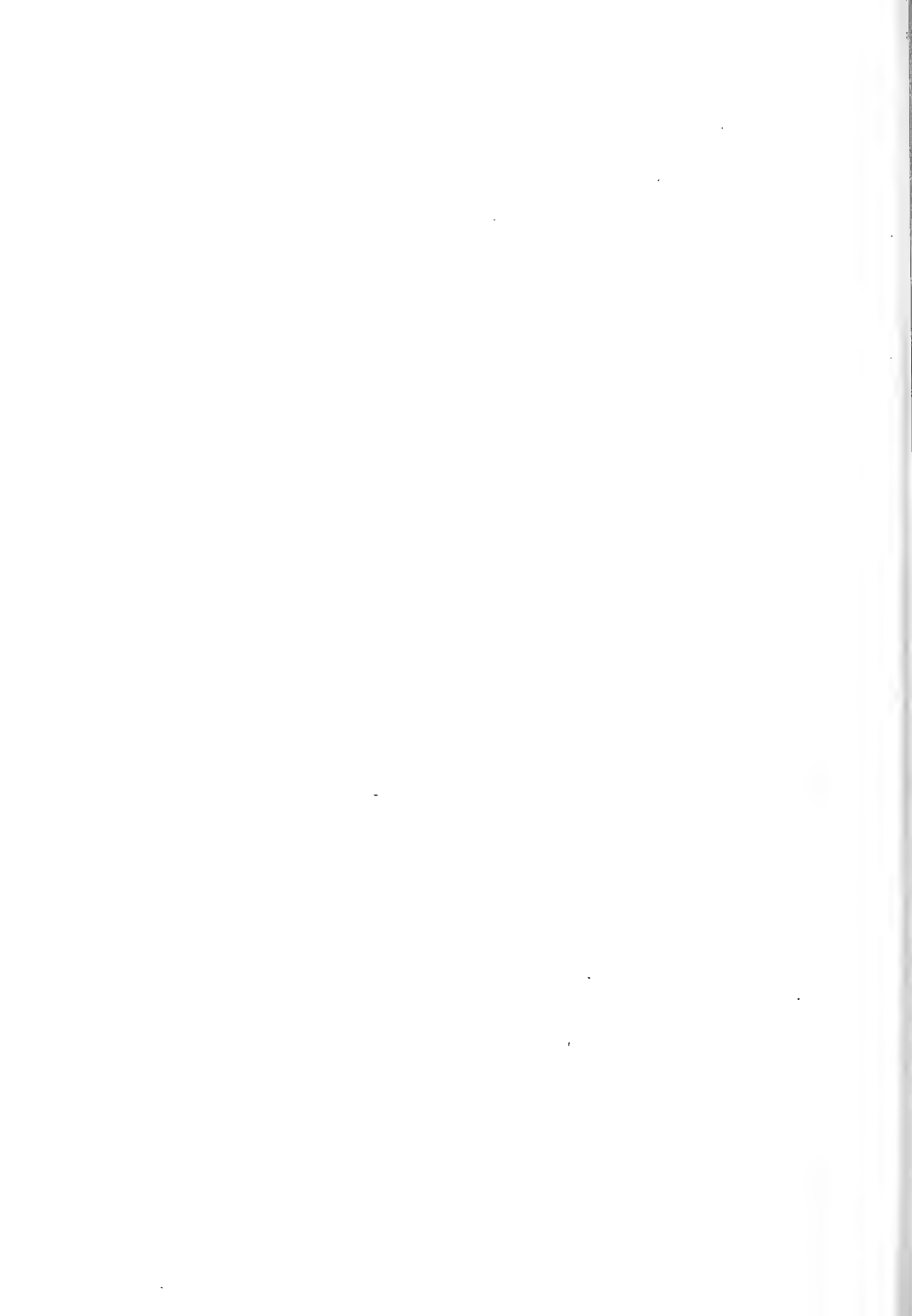
<i>Ecklonia</i> <i>buccinalis</i> (L) Hornem.
<i>Sargassum</i> <i>longifolium</i> (Turn.) Ag.
<i>Dictyota</i> <i>dichotoma</i> (Huds.) Lamour.
.. <i>naevosa</i> (Suhr) J.Ag.
<i>Zonaria</i> <i>interrupta</i> (Lamour.) J.Ag.

RHODOPHYCEAE.

<i>Scinaia</i> ? <i>salicornioides</i> (Kütz.) J.Ag.	Rare.
<i>Chaetangium</i> <i>ornatum</i> (L) Kütz.	
<i>Gelidium</i> <i>cartilagineum</i> (L) Gaill.	
.. <i>pristoides</i> (Turn.) Kütz.	
<i>Suhria</i> <i>vitata</i> (L) J.Ag. (On <i>Patella compressa</i> .)	
<i>Iridophycus</i> <i>capensis</i> (J.Ag.) Setch.	
<i>Gigartina</i> <i>radula</i> (Esp.) J.Ag.	
.. <i>stiriata</i> (Turn.) J.Ag.	
.. sp. nov. (From Strandfontein).	
<i>Gymnogongrus</i> <i>vermicularis</i> (Turn.) J.Ag.	
<i>Callymenia</i> <i>schizophylla</i> (Harv.) J.Ag.	Fairly common.
.. <i>Harveyana</i> J.Ag.	" "
<i>Rhodophyllis</i> <i>capensis</i> Kütz.	Common.
<i>Hypnea</i> <i>spicifera</i> (Suhr) Harv.	
.. sp.	
<i>Epymenia</i> <i>obtusata</i> (Grev.) Kütz.	
<i>Champia</i> <i>compressa</i> Harv.	Fairly abundant.

*Since this drift, there have been several recurrences, though on a smaller scale, of drift on the False Bay beaches, each time at a spring tide, e.g., Fish Hoek, 16-19 June 1939; from Glencairn to Muizenberg, 21-27 July 1939. In each case, while the same species of *Ulva* formed the bulk of the seaweed cast up, there was considerable variation as regards the other species present; for instance, *Nemastoma*, so common at Muizenberg, was entirely absent from the June drift at Fish Hoek.

<i>Plocamium corallorhiza</i> (Turn.) Harv.	Abundant.
„ <i>cornutum</i> (Turn.) Harv.	Fairly common.
„ <i>rigidum</i> Bory.	„ „
„ <i>coccineum</i> (Huds.) Lyngb.	„ „
„ ? <i>nobile</i> J.Ag.	„ „
<i>Hymenena venosa</i> (L) Kylin	„ „
<i>Neuroglossum Binderiana</i> Kütz.	
<i>Apoglossum</i> sp.	
<i>Delisea Suhrii</i> J.Ag.	
<i>Laurencia flexuosa</i> Kütz.	
<i>Polysiphonia virgata</i> (Ag.) Spreng.	
<i>Tayloriella tenebrosa</i> (Harv.) Setch.	
<i>Pterosiphonia cloiophylla</i> (Ag.) Falkenb.	Common.
<i>Placophora Bideri</i> J.Ag. (On <i>Codium</i> spp.)	
<i>Rhodochorton</i> sp. (On <i>Codium Lindenbergii</i> .)	
<i>Dasya scoparia</i> Harv.	
<i>Heterosiphonia dubia</i> (Suhr) Falkenb.	
<i>Pleonosporium Harveyanum</i> J.Ag.	
„ <i>purpuriferum</i> (J.Ag.) De Toni	
<i>Ceramium obsoletum</i> Ag.	
„ sp.	
„ sp.	
<i>Centroceras clavulata</i> Mont.	
<i>Grateloupia longifolia</i> Kylin	Occasional.
<i>Nemastoma lanceolata</i> (Harv.) J.Ag.	Very abundant.
<i>Chondrococcus Lambertii</i> (Suhr) Kütz.	Abundant.



NOTES ON SOME SPECIES RECORDED FOR THE CAPE PENINSULA.—I.

By R. S. ADAMSON.

In the list of the Peninsula Flora published by Bolus and Wolley-Dod (Trans. S. Af. Phil. Soc. XIV, 207-372, 1903), there are records for a number of plants that have not been collected in recent years. These records, together with some published since, are of some importance in relation to possible changes in the flora in an area with increasing population and a rapidly enlarging area of building and cultivation. The records are not all of the same kind. In some the apparent absence of the plant now may mean actual disappearance or very much reduced frequency of occurrence. The habitats of some species have been very much reduced. Areas such as Paarden Island or Green Point Common which possess a number of species not found elsewhere within the area are at present threatened by very severe alteration if not complete destruction of the habitats. Lakeside Vlei is also liable to large alterations. These are changes threatened or taking place but as great alterations have occurred in the past.

Other records are the result either of misidentification or in the case of some of the older ones of possible mistakes or uncertainties in the localities. Most of the older records which were rejected by Bolus and Wolley-Dod are not included here unless there is some special reason for so doing.

Any further information concerning any of these missing species will be gladly received.

Potamogeton pusillus L. This plant has not been seen here since it was collected by Ecklon. It is not in the List.

Zostera nana Roth was found by the late C. E. Moss in the channel connecting Lakeside Vlei with the sea about 12 years ago. The channel has since been canalised and the plant seems to have disappeared.

Aponogeton crinifolius Lehm. ex A. Benn. This is recorded in Flor. Cap. (VII 45, 1897), on the strength of a single specimen collected by Pappe on the Cape Flats. The specimen in Herb. Brit. Mus. is a very poor one but appears to be a deep water form of *A. angustifolius* which has no expanded blade to the leaf.

Prionanthium pholiuroides Stapf. This distinct endemic annual was

discovered by Wolley-Dod (3894 in Herb. Kew), on damp sandy flats near Fish Hoek. It has not been collected again. The locality has been very much altered by building and grazing and it may be lost.

Helictotrichum quinquesetum (Steud.) Schweich. This species rests on a collection by Ecklon from the top of Table Mountain. It has not been seen there or anywhere else since. Specimens of *H. longum* (Stapf) Schweich. may have additional bristles on the side lobes of the lemma.

Danthonia lupulina R. & S. In the List (359) this is recorded on collections by Ecklon at Doornhoogte and by Spilhaus on Table Mountain. The species is closely allied to *D. lanata* R. & S. and possibly might be passed over for that. While specimens of really characteristic *D. lupulina* have not been found, some that are intermediate between the two have been found on Constantiaberg. It is possible that *D. lupulina* is an extreme form of a line of variation of *D. lanata*.

D. curva Nees. This is included in the List (359) on the strength of a specimen collected by Verreaux. This is in Herb. Kew and is labelled "Prom. b. sp. ad Montem Diaboli." The species has an eastern distribution and has not otherwise been collected at all in the S.W. Cape. It is possible that the "Mons Diaboli" refers to some other than that by Table Mountain. Unless some confirmation is obtainable the species cannot be regarded as a Peninsula one.

Ehrharta Dodii Stapf. Found once near the top of Constantiaberg (Wolley-Dod 1961). It is a distinct species and one that needs to be searched for. It is based on this one collecting.

Eragrostis aspera Nees. Recorded in the List (360) as "near Cape Town" by Spilhaus. It has not been seen recently, nor have any localised specimens been seen. It was either a temporary casual or a mistake.

Lamarckia aurea Moench is recorded in the List as frequent near Simonstown. It is a conspicuous species but has not been collected since and appears to have been a temporary casual.

Juncus Sprengelii Nees. The only collection is that by Ecklon and Zeyher from Camps Bay. Much searching has failed to reveal it in recent years.

Urtica dioica L. Recorded in the List (319) with doubt. The plants concerned are *U. membranacea* Poir. which occurs occasionally on the lower mountain slopes above Cape Town.

Cerastium Dregeanum Fenzl. This species has been recorded by various collectors from the Peninsula (List 238). Specimens so named are Wolley-Dod 92, 3503 from Orange Kloof; L. Bolus from the same locality; Wolley-Dod 2099 from Tokai; and others. None of these however is the real *C. Dregeanum* which has not been found anywhere in the S.W. Cape. All belong to a variety of *C. capense* Sond. distinguished by the

larger flowers with petals as long as or longer than the sepals, petals with diverging not parallel lobes, ovary at opening of the flower rounded and flattened on top with styles as long as itself. The flower opens more fully than in the common form and the fruit is always pendent. The variety is a new one and may be characterized as follows :

C. capense var. *australe* var. nov. A typo differt, statu saepius majore, floribus majoribus subpendulis, petalis sepala aequantibus vel paullo superantibus bifidis lobis subdivaricatis sinu lato, ovario rotundo apice plus minusve plano, stylis longis ovario longioribus, fructibus majoribus pendulis.

Sandy soils on mountains, rare below 1,500 ft. Table Mountain, Noordhoek Mts. etc. Occurs outside the Peninsula on mountains on the coast belt eastwards to the Stormberg. The type is Adamson 767 in Herb. Bolus.

Melandrium. In the List 4 species are recorded that would be placed here ; these are *Silene capensis* Otth., *S. undulata* Ait., *S. ornata* Ait., and *Lychnis dioica* L. Of these the second *M. undulatum* (Ait) Rohrb. presents no difficulty. *M. capense* (Otth. ex DC) Rohrb. is a rather critical species not well distinguished from the above. There is a plant in the eastern and northern districts distinguished by the more erect habit, narrow leaves, long stalked flowers with narrow tubular calyx, and fruit clavate but very little widened upwards. The gynophore is as long as or longer than the narrow capsule. This is the plant that has most often been referred to *M. capense* ; it is one that has not been found on the Peninsula at all. The notes on the species in the List (237) seem really to refer to *M. ornatum*. There has been some confusion about *M. ornatum* (Ait.) Aschers. largely owing to the restriction of the name to plants with dark coloured flowers. The dark red flowered plant is the one which has been cultivated and the one figured in Bot. Mag. (t.382). There is found on the Cape Flats and elsewhere at low altitudes, not uncommonly, a plant in every way agreeing with *M. ornatum* except for the pale pink flowers ; e.g. Schlechter 1275, Levyns 5887, Adamson 1192, 2155, 2219, and outside the Peninsula, Bolus 12613B.

As plants identical with *M. undulatum* may have dark flowers (Harvey 231), the colour cannot be looked upon as in any way a diagnostic feature. It seems most probable that Schlechter's record of *Lychnis dioica* from the Cape Flats is really this pale flowered form of *M. ornatum*. The original specimens have not been seen, but repeated search has not given any evidence for any other species.

Ranunculus sceleratus L. In the List (232) this is included on a single specimen. It has not been found since and if correctly identified seems to have been a temporary casual.

Gymnosporia Schlechteri Loes. This rests on a single gathering (Schlechter 241) from Constantiaberg. It has not been found again. It is allied a *G. polyacantha* Szysz., a species of definitely eastern distribution. The species is not mentioned by Davison (Bothalia II 289. 1927).

Pterocelastrus rostratus (Thunb.) Walp. The only record is Pappe "ravines on eastern side of Table Mountain". No recent gathering has been made. Davison (l.c. 322) does not give any Peninsula records. The plant is a distinct one that may be still to be found in some of the less accessible kloofs.

Cassine papillosa Kuntze. The only record for this species on the Peninsula is a plant collected by Marloth in Orange Kloof which is quoted by Davison (l.c. 335). This specimen, Marloth 3426, is in Herb. Bolus and is mounted on the same sheet as an undoubted specimen of *C. papillosa*. Marloth 3426 is a fruiting twig with a round not elliptical fruit and leaves without the looping veins. The specimen agrees in every way with *Hartogia capensis* and should certainly be referred to that. *C. papillosa* must be eliminated from the list.

Maurocenia Schinziana Loes. was described from specimens collected "near Hout Bay," Schlechter 960. It is a critical species very closely similar to *M. Frangularia* Mill. but differing in the ovules being basal not pendent. On this character L. Bolus (Ann. Bot. Herb. I. 182. 1915) transferred the species to *Cassine*. The type specimen has not been seen but from the description (Bull. Herb. Bois. II. 194. 1894) the position of the ovules is the only differentiating character. The other features mentioned are all to be found in specimens of *M. Frangularia*. An examination of a number of these and especially of those with leaf characters agreeing with Loesing's description of his species has failed to reveal any with basal ovules.

Lauridia reticulata E. & Z. The record for this plant rests on Rehmann "Stinkwater near Cape Town." Repeated searching has failed to confirm its occurrence. The species is otherwise one with an eastern distribution and not likely to occur here.

Malvastrum albens Harv. Recorded in the List (239) for "Rondebosch." It has not been collected at all recently. While it occurs outside the area it may have disappeared within owing to building.

Hermannia flammea Jacq. The records quoted in the List (239) almost certainly refer to *H. rudis* N.E. Br. which is common but was not regarded as separate at the time they were made.

H. lavendulifolia L. The last collecting of this species was by Ecklon and Zeyher on "Flats near Salt River." It is a distinct species not likely

to have been overlooked and seems to have disappeared with the spread of Cape Town.

Bergia glomerata L.f. is another plant that seems to have disappeared.

Centella (*Hydrocotyle*) *septemloba* Schinz described from specimens collected on Constantiaberg, Schlechter 878, is very closely allied to *C. hederifolia* (Burch.) Drude and only differs in having woolly fruits. The leaf characters are not constant. It cannot be maintained as a separate species.

C. hermanniifolia E. & Z. has no real claim to be included in the flora. Specimens so named from Peninsula localities, e.g. Rehmann 1361, are forms of *C. capensis* (L.) Domin with leaves more deeply cut than is usual.

Hermas gigantea L.f. Sonder's records quoted in the List (272) refer to *H. Pillansii* Norman. There is no reason to suppose that *H. gigantea* occurred at all on the Peninsula.

H. quinquedentata L.f. Recorded for "Top of Table Mountain" by Thunberg. It has not been found since and the record probably refers to a small plant of *H. capitata*. *H. quinquedentata* differs in the cuneate leaves and shorter fewer leaved involucre; the characters of petiole length and leaf position given by Sonder are not constant.

Seseli asperum (Thunb.) Sond. Sonder's description was based on a specimen collected by Zeyher now in Herb. Mus. Nat. Hist. Stockholm. Examination shows that this is the plant generally known as *Sonderina hispida* (Thunb.) Wolff (*Ptychotis hispida* Sond) though a rather glabrous form of that species. Thunberg's original description of *Sium asperum* is too short for any certainty. The specimens in his herbarium are poor but seem to be rather luxuriant plants of *Sonderina hispida*. *Seseli asperum* thus is the same as *Sonderina hispida*. The name "*hispida*" can stand as Thunberg published his *Sium hispidum* and *S. asperum* at the same time.

Schlechterosciadium gracillimum Wolff. This was described (Fedde Rep. XVII. 154. 1921) from specimens collected by Schlechter on the Simonstown Mountains at 1,000 ft. The type specimen, Schlechter 321, has not been seen but in Herb. Bolus there is a sheet, Schlechter 331, collected in the same place at the same time. This is a small plant with a somewhat swollen underground portion. The leaves are exactly like the first ones produced by *Chamarea capensis* (Thunb.) E. & Z. In that plant leaves of this kind wither early and are followed by larger ones with much narrower segments. These also wither before the flowering period. The inflorescence and fruit are also closely similar to those of *C. capensis* except for the small size. The plant seems best regarded as a starved and precocious state of *C. capensis* in which flowers

occur with the juvenile leaves. It is worthy of note that in his later monograph Wolff (Pflanzenr. IV. 228: 173. 1927) quotes Schlechter 321 under *C. capensis* but does not mention his earlier species.

Peucedanum abbreviatum E. Mey. The record rests on collections of Krauss. The species is a distinct one with an eastern distribution and one not at all likely to be found on the Peninsula. Most probably the locality alleged is incorrect.

Royena hirsuta L. The records for this species (Flor. Cap. IV. 1; 452. 1906) refer to localities outside the area. It has never been gathered on the Peninsula.

Wahlenbergia subpilosa von Brehm. This is recorded as *W. paniculata* A. DC. in the List (292) and as *W. paniculata* var. *glabrata* Sond. in Flor. Cap. II. 575. 1855. It is an annual on sandy flats which has not been collected for many years and is possibly now extinct within the area.

W. saxifragoides von Brehm. This is based upon Bolus 7107 which is the only collecting. It was found at Kenilworth growing among *W. procumbens*. It is very closely allied to that species and though distinct in some features can hardly be looked upon as more than a state of that unless more material is found.

W. filicaulis Good is a state of *Prismatocarpus sessilis*.

Lightfootia rubens Buek was recorded by Harvey "near Cape Town" and *L. Thunbergiana* Buek by Drège "between Hout Bay and Wynberg." Neither has been collected again. *L. rubens* is a plant of the eastern Cape, and *L. Thunbergiana* of the northern west coast. Both records seem to be mistakes either in identification or in labelling.

Laurentia bifida Sond. In the List (290) this was included with doubt on the basis of a plant found on Steenberg, Wolley-Dod 1292. This is in Herb. Bolus and is most like a small state of *L. arabidea* DC.

Isolobus corymbosus (Presl) A. DC. (*Lobelia corymbosa* Grah. in List). The inclusion of this as a Peninsula plant rests on Bolus 3858 collected on the Kalk Bay Mountains. The specimen is, however, misidentified and is *L. Ecklonianus* var. *spathulatus* (Good) Adamson.

Lobelia linearis Thunb. The last records are Ecklon and Zeyher from Doornhoogte and MacOwan 2929 from Maitland. It has not been seen since, and may well be now extinct within the area. Specimens from Kenilworth Race Course which seem distinct from *L. setacea* and which have been named as this species are not so.

CARL PETER THUNBERG.

AN EARLY INVESTIGATOR OF CAPE BOTANY.

(With Plates 8—10).

By MIA C. KARSTEN.

II.

Proceeding to the men of letters at home who showed a keen interest in THUNBERG's botanical discoveries at the Cape and actually acted as his patrons and supporters, his teacher and friend CAROLUS LINNAEUS or CARL VON LINNÉ after having been knighted, may be mentioned first.

LINNAEUS (1707-1778) who was a surgeon too like most naturalists at the time, raised for himself an everlasting monument by his foundation of the vegetable system. In his *Species Plantarum* (1753) the approximately 10,000 species of plants known at the time are classified according to a system based on sexual characters. Moreover LINNAEUS used in this work for the first time the binary nomenclature that proved to be most practical and was generally accepted afterwards.

His extensive herbarium was secretly sold by his widow to England, where it came later on in the possession of the Linnean Society of London.

As already pointed out, LINNAEUS was greatly interested in the plants THUNBERG found at the Cape. In the collection of manuscripts belonging to the Library of Uppsala University we find some letters from LINNAEUS to C. P. THUNBERG containing interesting information about shipments of plants which he received from the Cape and with which he appears to be exceedingly pleased. The many new species of Cape plants which had been forwarded to him personally by THUNBERG, as well as those he observed in the collections of his friends which had been originally sent by THUNBERG too, he carefully examined and named.

It is rather curious that LINNAEUS did not see anything of the collections of plants sent from Japan.

The early discoveries of PAUL HERMANN or HERMANNUS (1646-1695), professor of botany at the University of Leyden, whose name is com-

memorated in the South African genus *Hermannia* (Sterculiaceae) and is attached to the genus *Leucadendron*, must have made a deep impression upon LINNAEUS who is known to have said: "This land of the Cape of Good Hope in farthest Africa no botanist ever before has trod. Oh, good Lord! How many, how rare and how wonderful plants on this single day presented themselves to Hermann's eyes!"²³ Between 1670 and 1677 HERMANN made a memorable journey to Ceylon with the usual stops at the Cape, and beyond dispute he was the first botanist who lifted a corner of the veil that thus far enshrouded the vegetation of the Cape of Good Hope, although nearly 50 years earlier, in 1624, the Dutch missionary JUSTUS HEURNIUS on his way to the East Indies, when his ship the "Gouda" put in at Table Bay in order to take on supplies, used the short stay to set out on a little excursion to Table Mountain. Though HEURNIUS is not known as specially interested in botany, he collected several plants at that occasion, i.e. *Stapelia variegata*, and made clever drawings of about a dozen of them.

From the above quotation we may conclude that LINNAEUS did not know about HEURNIUS' early visit to the Cape of Good Hope.

How LINNAEUS would have loved to observe the Cape plants in their native habitat with his own eyes! In this connection we may quote here in English translation what ANDERS SPARRMAN writes about LINNAEUS in his book "Voyage," Vol. I, p. 113, October, 1772: "I remember I have heard the great Linné often say that what he had regretted most in his life was that he had not accepted the offer to make a journey to the Cape of Good Hope."²⁴

Among the collection of letters kept in the Library of the Uppsala University there are only a few letters LINNAEUS wrote to THUNBERG when the latter was at the Cape.

In a letter, dated June 17, 1773, LINNAEUS expresses his thanks for the many excellent *Oxalides* and the various *Hypoxides* of great rarity THUNBERG had sent to him.

Of greater importance is a letter, dated October 29, 1773, and addressed to:

Myn Heer

De Heer Doctor Thunberg

Cap die b. sperance.

The first page of this letter being of special interest, *inter alia* because

²³ Vide ALAIN WHITE and BOYD L. SLOANE, The *Stapeliaceae*, second edition 1937, Vol. III, p. 1116.

²⁴ Orig. French text: "Je me rappelai d'avoir ouï dire souvent au grand Linné, que ce qu'il avait le plus regretté en sa vie, c'était de n'avoir pas accepté l'offre de faire un voyage au Cap de Bonne Espérance."

of a remarkable summary of Cape plants with additional notes, is reproduced herewith and reads as follows in English translation ²⁵:

"Noble and Very learned Hr. Doctor

My dear Fellow-Countryman,

Last summer I duly received by your incomparable kindness two packets with so many rare plants that it made me dizzy (literally: that it turned my brains); I took the greatest delight in them from the midsummer. For every plant I am most obliged to you, Hr. Doctor. God grant that I may live to see the day when I may talk with you about it.

I have also seen Arch. Baeck's fine collections, containing some (specimens) which appeared to me very curious, especially a plant with leaves resembling those of a pine-tree, though broader and less tightly packed (literally: looser); between the leaves I found 5-androus, monogynous flowers with a tubular 5-lobed corolla; but since the fruit was missing, I do not know to which genus this plant belongs.²⁶

The many *Ixiae* and *Orchides* greatly amazed me.

Campanula or Roella with backward overlapping or revolute leaves.

²⁵ Orig. text in Swedish and Latin:

"Edle och Höglarde Hr. Doctor

Min kiäre Landsman.

richtigt har jag bekommit i sommar 2ne pacquet af Hr. Doctorens oförlikliga wän-skap med så många rara växter, att jag hisnat där wid, hwar på jag roat mig alt ifrån midsommaren med största fågnad i werlden. För hwar enda wäxt är jag på det aldra högsta Hr. Doctoren förbunden. Gud gifwe jag lefde den dag jag fingo om desse språka med Hr. Doctoren.

jag har ock sedt Arch. Baecks wakra samlingar, i hwilken senare några före-kommo mig alt för besynnerliga, e.gr. en wäxt med blader lika tall, fast bredare och losare; emellan dem sutto flores 5andri monogyni corolla tubulosa 5fida; men äfter fruckten saknades wet jag ej hwems släcktinge hon är.

De mange *Ixiae* och *Orchides* satte mig i största förundran.

Campanula an Roella foliis retrorsum imbricatis s. revolutis.

Astrantia ciliaris förunderlig.

Erica retorta med tillbakas böjde bladerne; aldrig hörd.

Thunbergia fick jag af D. Montin; litet specimen

Mesembryanth. pinnatifidum, underlige blad in hac gente.

Adonis capensis filia med foliis linearibus. nata ex diverso patre.

Phryma dehiscens latere calycis.

Heliophila? floribus flavis, cujus generis?

Psoralea capitata trifolia; an herbacea?

Hedysarum imbricatum fol. simplicibus affinis H. strobilifero.

Monsonia (Geranium stam. 5, singulis antheris 3) fol. simplicibus lobatis. certe filia hybrida Monsoniae speciosae foliis bipinnatis.

Gnaphalia varia.

Xeranthemum fulgidum praestantissima planta.

Othonna virginea foliis 5—7 dentatis, flor. parvis inter folia.

Lobelia volubilis in hac gente admiranda.

Disa egregiae conservata, singularis certe.

Cliffortia althaeifolia; quis ex facie divinaret.

Hermas (Bupleurum integrifol. hirsutum) accepi 3 specimina an unius an diversae speciei? an sexu distincta.²⁷

²⁶ Perhaps *Retzia capensis*, which was described by THUNBERG three years later. Physiographiska Sällskapets Handlingar, Stockholm, I: 1. tab. 1 fig. 2. 1776.

Astrantia ciliaris, peculiar.

Erica retorta, with reflexed leaves; never heard of it.

Thunbergia I received from Dr. Montin; small specimen.

Mesembryanth. pinnatifidum, curious leaves in this genus.

Adonis capensis, form with linear leaves, grown from a distinct parent.

Phryma, dehiscing (meaning obscure) on one side of the calyx. (?).

Heliophila? with yellow flowers. Of what genus?

Psoralea capitata, trifoliolate; a herbaceous plant?

Hedysarum imbricatum, with simple leaves, allied to *H. strobiliferum*

Monsonia (*Geranium*, 5 stamens with 3 single anthers) with simple, lobed leaves. Certainly a hybrid form of *Monsonia speciosa* with bipinnate leaves.

Various *Gnaphalia*.

Xeranthemum fulgidum, a most outstanding plant.

Othonna virginea, with 5-7 dentate leaves and small flowers between them.

Lobelia volubilis, to be admired in that genus.

Disa, excellently preserved, certainly peculiar.

Cliffortia althacifolia, as may be guessed according to its appearance.

Hermas (*Bupleurum integrifol. hirsutum*). I received 3 specimens, do they belong to one or to different species? or to a distinct sex?"

The names of the plants LINNAEUS mentioned in his letter need some reviewing; several of them being incorrect were later on replaced by the names which are valid to-day.

Below are the names of the plants in Bäck's collection enumerated by LINNAEUS, to which we have added the authorities, and in some cases also the orders to which the plants belong (for a quick orientation of the non S. African reader) and the names which are recognized in modern botany.

Astrantia ciliaris, L.f. (Umbelliferae) (correct).

Erica retorta, Montin.

Mesembryanthemum pinnatifidum, L.f.

Adonis capensis, Thunb. = *Knowltonia gracilis*, DC. (Ranunculaceae).

Phryma dehiscens, L.f. = *Bouchea cuneifolia*, (L.f.) Schau. (Verbenaceae).

Psoralea capitata, L.f. (Leguminosae) (correct).

Hedysarum imbricatum, L.f. = *Hallia imbricata*, (L.f.) Thunb. (Leguminosae).

Gnaphalia varia: very likely for the greater part species of *Heli-chrysum* and *Metalasia*, the genus *Gnaphalium* being represented at the Cape only by a small number of species.

Xeranthemum fulgidum, L.f. = (*H*) *Elichrysium fulgidum*, (L.f.) Willd. (Comp.).

Othonna virginea, L.f. = *Euryops virgineus*, (L.f.) Less. (Comp.).

Lobelia volubilis, Burm. = *Cyphia volubilis*, (Burm.) Willd. (Campanulaceae).

Cliffortia althaeifolia ?? (we could not trace this species) (Rosaceae).

Hermas (*Bupleurum integrifol. hirsutum*) ?? (Umbelliferae).

As to the remaining part of this letter, the summary of plants given on the first page, is not continued on the next page which contains some personal notes and news from Sweden. Further we find recorded that LINNAEUS' vegetable system has been accepted in England (the Royal gardens), Scotland (Edinburgh) and Rome (the Pontifical gardens).

In an undated letter LINNAEUS expresses his satisfaction with a greater shipment of plants: "I worked at these plants for 8 days and might not be able to send them off in a month's time."

In December 1774 he informs THUNBERG, that he has added the names to the Cape plants belonging to MONTIN, very likely those which the latter had received from THUNBERG²⁷.

Another Swedish patron of C. P. THUNBERG was Archiater ABRAHAM BÄCK (1713-1795)²⁸, who was not only a most prominent medical man, but also a quite interested botanist and collector of plants. BÄCK studied medicine at the Uppsala University, and after having finished his studies came to Stockholm where he practised as a doctor. He became Assessor of the Collegium Medicum and in 1749 he was appointed as a court-physician of the King of Sweden.

He was a very good friend of CAROLUS LINNAEUS (father), perhaps the most intimate.

Like LINNAEUS and THUNBERG, BÄCK had travelled on the European continent, and we find recorded that he also visited Holland, where he stayed nearly a whole year. The greater part of the time he spent at Leyden, where he studied anatomy with the famous ALBINUS, but also other subjects such as physics with VAN MUSSCHENBROEK and botany with A. VAN ROYEN, the patron of LINNAEUS. He also visited the distinguished scientists GRONOVIVS and JAN BURMAN (BURMANNUS) at Amsterdam.

According to a statement BÄCK himself made, he had the largest herbarium in Sweden at the time, next to that of LINNAEUS. He himself

²⁷ Vide: H. O. JUEL, *Plantae Thunbergianae*, p. 7 (1918).

²⁸ Vide: *Abraham Bäck*, Minnesteckning av ALFRED PETTERSSON. Med porträtt. (Levnadsteckningar över K. Svenska Vetenskapsakademiens ledamöter. 103).—Stockholm, 1932. And also Dr. C. A. BACKER, *Verklarend woordenboek van wetenschappelijke plantennamen*, p. 50.—Groningen/Batavia, 1936.

diligently collected plants, *inter alia* in the botanical garden in Paris. But he obtained many more plants from friends and acquaintances who went out into foreign countries, as well as from collectors there.

In connection with THUNBERG it is of importance to know that BÄCK gave financial support to his journey to the far East. In return THUNBERG sent to him plants at least twice from the Cape and once from Java.

In the collection of manuscripts kept in the library of Uppsala University there is a letter BÄCK wrote to THUNBERG in 1774, in which he acknowledges the receipt of plants THUNBERG had forwarded to him from the Cape. In addition to this BÄCK writes that he had sent them to LINNAEUS because of the names, and that the latter had kept some species which he thought he did not possess. LINNAEUS wrote about this to BÄCK on September 12, 1773 (thus some time before BÄCK sent his letter to THUNBERG) as follows: "Thanks very much for the loan of the Cape plants. There are no *Ixiae* among them, for I have got so many (specimens) of this genus that they all need another examination. Two plants, a grass and a herb, I have kept, since they do not occur in my collection."²⁹

Returning to BÄCK's herbarium, this was of special value, since some of the specimens had been identified by LINNAEUS father and son. The descriptions given by LINNAEUS *filius* of some plants in his *Supplementum Plantarum* (1781) are founded, as LINNAEUS points out, on the specimens in the herbarium of BÄCK, brought home from the Cape and the East Indies by THUNBERG and FORSTER (a German botanist who took part in a voyage round the world of Capt. James Cook) and possibly others.

After the death of BÄCK his herbarium passed into the possession of his son-in-law, the Royal Secretary ALBERT IHRE, and was kept for a long time on IHRE's estate "Ekebyhof" on a little island in the lake Mälaren near Stockholm. Later on it came to the Botanical Institute at Uppsala. But the specimens from the Cape and the East Indies appear to have been taken away. Perhaps BÄCK had given them during his life to LINNAEUS *filius*.

PETER JONAS BERGIUS (1730-1790), a doctor and an outstanding figure in the botanical world, may be also ranked among THUNBERG's best friends and helpers at home.

BERGIUS appears to have originally intended to become a lawyer or a minister, but because of his stammering habit he was compelled to choose another career. So he took up medicine; first he was at college at Lund, later on (since 1749) at Uppsala, where he was so captivated by the lectures of LINNAEUS, that he decided to devote himself especially

²⁹ Vide: H. O. JUEL, *Plantae Thunbergianae*, p. 8 (1918).



PLATE 8.
ABRAHAM BÄCK (1713-1795).
Medicinae Doctor.

After a coloured photograph of a pastel by G. Lundberg, belonging to Civil Engineer Sten Westerberg, reproduced in *Abraham Bäck*. Minnesteckning av A. Pettersson (Stockholm 1932).

(To face p. 92).



PLATE 9.

PETER JONAS BERGIUS (1730-1790).

Medicinae Doctor and Professor of Natural History at Stockholm.
After a print belonging to the Iconotheca Bergiana at Stockholm.

(To face p. 93).

to the study of natural history. He drew general attention by his diligence and in 1750 he obtained a scholarship through LINNAEUS' intercession. In 1753 he became a doctor and set up at Stockholm where he got a large practice and kept working until his death. The year 1761 brought his appointment as a professor of natural history.

In addition to some medical works and essays BERGIUS was the author of a great number of botanical publications. Moreover he founded by means of an ample donation the botanical garden at Stockholm, named after him *Hortus Bergianus* or Bergianska Trädgården in Swedish, with additional library and collections.³⁰

BERGIUS too took a keen interest in THUNBERG's botanical discoveries at the Cape, and in some letters BERGIUS wrote to THUNBERG, mention is made of packets of plants and seeds the latter sent to him from the Cape.

In his book "Travels" (at the beginning of 1773, after the first journey into Caffraria) THUNBERG records something about a shipment of plants and various zoological objects to Europe. He writes that after the seeds had been dried well, the plants glued on imperial paper, birds and insects packed in cases and living trees and bulbs respectively planted and put in cases, an important shipment of these articles was directed to the botanical gardens at Amsterdam and Leyden, and that the remainder was distributed among his patrons and friends in Sweden, especially Archiater and Chevalier VON LINNÉ, Archiater and Chevalier BÄCK, Professor BERGIUS and Doctor MONTIN.³¹

In connection with these South African importations it is of interest to know that in 1780 BERGIUS described the umbelliferous plant *Jasione capensis* (= *Astrantia ciliaris*, L.f.).

In the library of Uppsala University we find no fewer than 47 letters from BERGIUS to C. P. THUNBERG, of which copies in typescript have been deposited with the Royal Academy of Science (Kungl. Vetenskapsakademien) at Stockholm. Fortunately we were in a position to examine these typed copies, for being not very familiar with the Swedish language, it would have been a rather precarious undertaking to decipher the original manuscripts in BERGIUS' scribbly handwriting.

The first letter of this series is dated September 20, 1771, the last one May 31, 1790, the year of his death.

It will be easily understood that not the entire correspondence was useful for our publication which is specially meant to elucidate THUNBERG as an explorer of the hitherto little known flora of the Cape Colony.

³⁰ These short biographical notes on P. J. BERGIUS have been taken from Dr. C. A. BACKER, *Verklarend Woordenboek*, p. 63 (1936).

³¹ Vide: H. O. JUEL, *Plantae Thunbergianae*, pp. 6-7 (1918).

So we shall confine ourselves to quote here—in part or in full—a selected number of BERGIUS' letters whose contents are of special interest, viz. 4 letters addressed to the Cape of Good Hope, and some letters sent to THUNBERG in later years, in which some important events in THUNBERG'S life are recorded, apart from valuable information about shipments of plants from the Cape and subsidization of his journeys. Moreover in this correspondence there stands out clearly the great respect BERGIUS had for his clever colleague, and not in the least because of his excellent qualities of character.

With the help of a good dictionary and a Swedish grammar we managed to translate the greater part of these writings and we are much indebted to Prof. R. E. FRIES at Stockholm for providing the additional translations.

From the first letter to the Cape, bearing date October 21, 1774, we will quote following passages³²:

"I learn from your agreeable letter that I am to expect 1 packet that was sent by way of Holland at the beginning of this year, and another one forwarded by the same way early in May, and also a case with bulbs. From all of this I have received nothing, neither the packets, nor the case. But I got from Holland by the kind offices of SCHULTZE a packet with plants intended for Archiater BÄCK. At the same time and by the same way your own packet, for your personal use, followed, which is to be placed with me and which I shall keep sacredly and unopened, until God willing you will come yourself and open it, and finally take it with you. But there was nothing for myself. May-be you have hurriedly written BÄCK'S name on the packet instead of mine; . . .

. . . Your last letter which I received to-day, reached me through the intermediary of Linnaeus at Uppsala. I got the letter without cover,

³² Orig. Swedish text: "Jag ser af Herr Doctorns angenäme bref, at jag har at wänta 1 paquet som sändes wid början af detta år, öfver Holland, ett paquet som sändes samma wäg i början af maj, och en låda med lökar. Af alt detta har jag intet fått, hwarken paqueterna eller lådan. Nog fick jag från Holland genom Schultze ett paquet med örter till Archiat. Bäck, hwarjemte samma gång följde Herr Doctorns egit paquet, för sin räkning, såsom depositum hos mig, det jag heligt förwarer och wårdar, samt obrutit skall förwara, tils Herr Doctorn will Gud sielf personligen kommer och bryter det, sedan det afhämtet; men för min räkning war intet. Torde hända at Herr Doctorn i hastighetén skrifwit Bäckens namn på paquetet, i stället för mitt; . . .

. . . Herr Doctorns sista bref, som jag i dag bekom, hade gått genom Linnaeus i Upsala til mig. Jag fick det utan couvert, således upbrutit och pillradt. Af de örter, hwarom Herr Doctorn i brefwet behagade skrifwa, saknades *Solandra* och *Thunbergia*, hwilket gör mig så mycket mera ondt, som Thunbergia hade warit den käraste jag kunnat förwara. Af denna korta relation behagar Herr Doctorn se, huru afwogt och contrairt det gådt med Herr Doctorns sändningar til mig. . . .

. . . Då Dr. Montin beskref Thunbergia i Wet. Acad. handl., så hade han skrifwit, det Herr Doctorn då redan förärat honom 1200 st. Capska örter; men af fruktan för Holländarne, lät jag utstryka det."

Edle af Högskole Hs Docter
min kääre Landmon.

riktigt har jag bekommit i sommar 2:re parquet
af Hs Doctrens oförlörliga vänskap med så många
rara växter, att jag lifsat där vid, hvar på jag
roal mig allitän medformaren med stoffa jagriad
i wisten. För hvar enda växt är jag på det
allra högsta Hs Doctren förbunden. End gifte jag
leste den dag jag kunge om dess förda med Hs
Doctren... jag har' int sett Ank. Döck, wakra
samblingar, i hvilken senare några förkomma
mig all för besynerliga. e. g. en växt med bladen
l. n. tall, fast bedare och l. n. emellan den l. n.
flora Sunda monogyni corolla tubulosa sp. n., men
allt fulten farsad, wel jag e. hvar jagialinga
hon är

De mange sp. n. och ondtid, fäle mig i stoffa förundran.
carnanula in Realla folij retorsum imbricat, f. revoluty

Astratia ciliari förundadly

Arria retola med l. n. bladen, along l. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

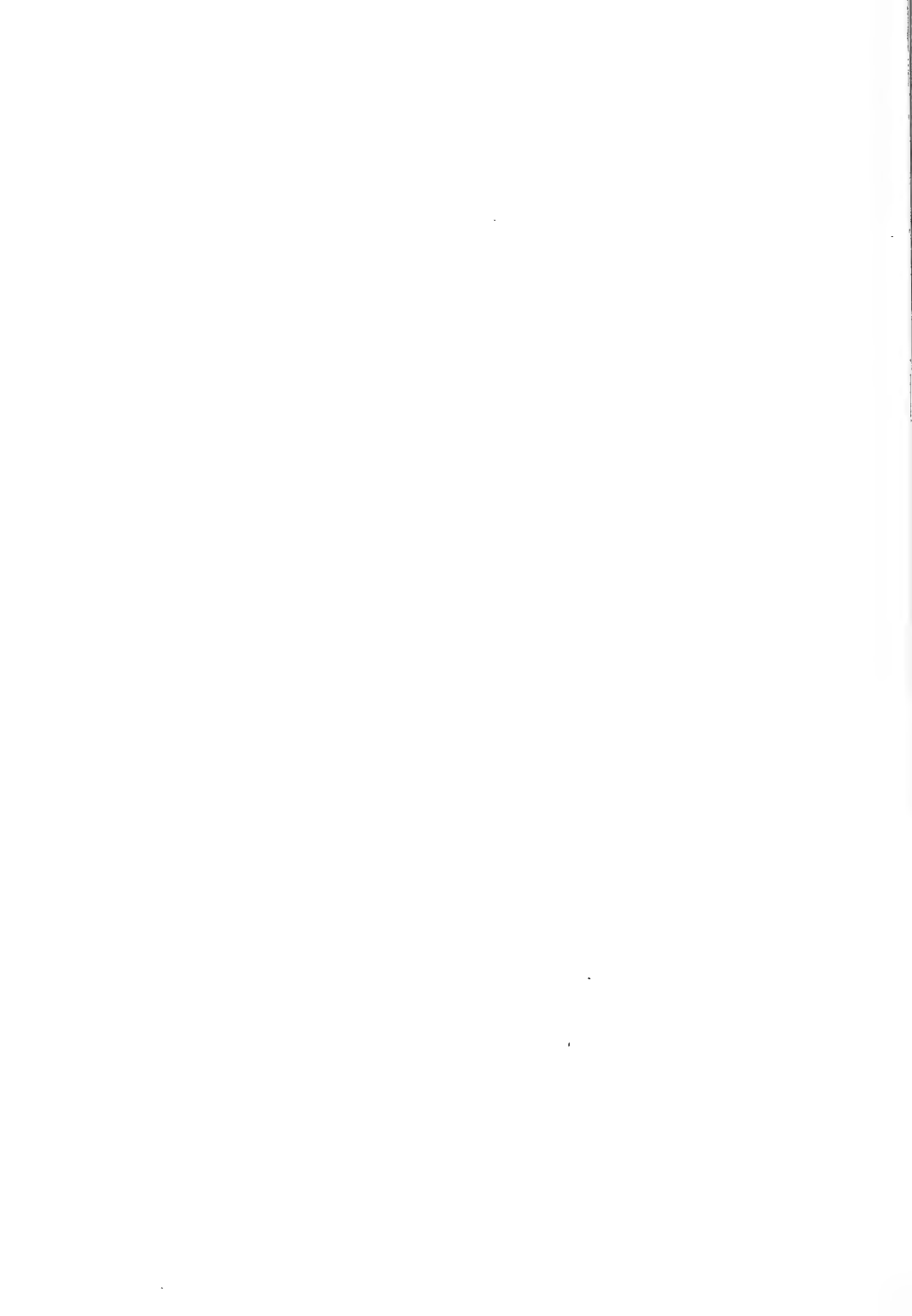
Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.

Thunbergia f. n. jag af D. Monlin, l. n. p. n.



and consequently broken open and pillaged. Of the plants you kindly wrote of, *Solandra* and *Thunbergia* were missing, which is the more annoying, since *Thunbergia* would have been the very plant I should have liked to keep (literally: the dearest I could keep). From this short note you may see how badly and hard it went with your shipments to me. . . .

. . . When Dr. Montin described the *Thunbergia*³³ in Wet. Acad. handl., he had written that you had already presented him with 1,200 specimens of Cape plants. However, for fear of the Dutch I had this struck out."

In the second letter to the Cape of November 6, 1774 (erroneously dated "6 Octobris 1774") BERGIUS writes as follows³⁴:

"Honourable and far-famed Doctor,

A few days ago I wrote to you by way of Holland and by the kind offices of the chemist Schultz in that country. Within a short time I wrote two letters, but being doubtful whether they have arrived, I now write to the address of the East India Company and hope this will safely reach you.

I shall recapitulate now something of what I wrote in my last letter,

³³ MONTIN's *Thunbergia*, described in Vetensk. Acad. Handl., 1773, p. 288, tab. III, is not allied to *Thunbergia capensis*, Retz., *Th. alata*, Bojer, etc. (Acanthaceae), but is identical with *Gardenia Thunbergia*, Thunb. (Rubiaceae).

Very likely the *Thunbergia* P. J. BERGIUS refers to in his letter, is *Gardenia Thunbergia*, Thunb.—M.K.

³⁴ Orig. Swedish text:

"Ädel och widdberömd Herr Doctor,

För några dagar sedan skref jag til Herr Doctorn genom Holland och chemisten Schultz därstädes. Innom kort tid skref jag 2ne bref; men i owisshet om de framkomma, så skrifwer jag nu genom ostindiska compagniets adresse, det jag hoppas skall gå säkert. Jag skall nu recapitulera något af det jag i mina förra bref skref; neml.n anförande af en tidning, som ofelbart skall fånga Herr Doctorn. Capit. Ekeberg skref til mig at Herr Doctorn i holländska tjänsten ej war så defrayerad, som wederborde. Jag fant det wara min skyldighet at i Kongl. Wetenskapsacademien utwerka, det något understöd i från academien skulle til Herr Doctorn ut-sändas. Den hederlige secretaren och Ridd. Wargentin och min Bror Banco Commissarien som med mig arbetari lika ifwer och med lika lust i natural historien, och i böckers och örters hopsamlande: hulpo til, hwarigenom wans at Herr Doctorn nu får 100 specie Riksdaler, såsom en skänk. Arch. Bäck talte ock wackert för Herr Doctorn, dessa 100 Rdr. sändas nu, med utgaende ostindiska skeppet, medelst ett creditif af ostindiska compagniet til dess commissionair i Cap. b. sp. at till Herr Doctorn dessa pengar utbetala; hwarföre Herr Doctorn behager adressera sig til honom i detta ärende. . . .

. . . Tack för sista brefwet, som gick under Arch. v. Linnés couvert. Jag fick det öppet, pilleradt, *Thunbergia* och *Solandra* borttagna; hwilket gör mig så mycket mera ondt, som jag gerna önskade at äga dessa bägge Örter, särdeles *Thunbergia*, hwilken wore den käraste i hela mitt herbario. . . .

. . . Jag begärade i mitt förra bref, at Herr Doctorn benäget täcktes procurera mig örter, af dem Herr Sparman samlat på sina resor. Jag torde annars blifwa i mistning af dem, efter jag ej speciatiu är känd med Herr Sparman. Men genom Herr Doctorns bearbetande kan mycket winnas i denna sak. Herr Sparman skall koc ej förlora härpå."

viz. the quotation of a piece of news that certainly will please you. Capt. Ekeberg wrote to me that you were not paid in the Dutch service as you ought to be. So I thought it my duty to contrive at the Royal Academy of Science that you will be supported on behalf of the Academy. The honourable Secretary and Chevalier Wargentin and my Brother the Bank-commissioner, who are both occupying themselves with natural history with the same diligence and pleasure, and are collecting books and plants, gave their support, through which it was gained that you will obtain now as a present 100 Riksdaler in cash. (As a matter of fact) Archiater Bäck has also put in a good word for you. Those 100 Riksd. are sent now with an outward bound East-Indiaman and by means of a letter of credit from the East-India Company to its commissioner at the Cap. b. sp., in order that he pays out the money to you. So will you kindly apply to him for it? . . .

. . . Thanks for your last letter that has been forwarded under Archiater von Linné's cover. I received it opened and pillaged, Thunbergia and Solandria having been taken away, at which I am the more annoyed, since I should very much like to possess these two plants, especially Thunbergia, which would be the most welcome plant in my whole herbarium (literally: the dearest pl.). . .

. . . In my previous letter I expressed the wish that you would be so kind as to obtain for me the plants Sparman³⁵ collected on his journeys. Otherwise I may not have the opportunity to get them (literally: otherwise I should probably miss them), since I am not specially acquainted with Mr. Sparman. But much may be gained in this matter through your mediation. Mr. Sparman will lose nothing by it."

This letter was addressed:

Aan Myn Heer de Heer Carl Pieter

Thunberg, Medicinæ Doctor.

te Caap de Goede hoop.

by Myn Heer Ferse.

Proceeding to the third letter BERGIUS addressed to the Cape, dated December 25, 1775, we will reproduce this in full³⁶:

³⁵ ANDERS SPARRMAN (1748-1820), a Swedish naturalist and friend of C. P. THUNBERG, who visited the Cape Colony twice, viz. in 1772 and 1775. On his first journey he called at the Cape nearly at the same time as THUNBERG.

In the next chapter we will return more extensively to this prominent figure in natural history.—M.K.

³⁶ Orig. Swedish text:

"Högädle Herr Doctor,

Ehuru jag är owiss om detta brefwet nånsin råkar Herr Doctorn, så sänder jag det dock med ostindiska skeppet til Cap b. sp. Alla Herr Doctorns sändningar

"Very honourable Doctor,

Although I am doubtful whether this letter will ever reach you, I will forward it with an East-Indiaman to Cap. b. sp. All your shipments (of plants etc.) I have duly received and I beg to tender my respectful thanks for them. The packets for your own use which were placed with me, I keep sacredly with unbroken seals. Since they have insects on them I have placed these packets in an oven with carefully controlled heat.

Did you receive the 100 Riksdalers in cash, which the Academy of Science at my persuasion sent to Cap. b. sp. by means of the East-India Company? I am afraid that you may have left for Japan before the ship arrived. In that case the money is placed with the Governor of the Cape, as I have been informed.

The Almighty keep and watch over you on all your ways, while I remain with all sincere friendship

Your humble

P. J. Bergius."

This letter was addressed

à Monsieur de Thunberg, Docteur
en Medicine. by Min Heer Ferse.
tot Cap op good hope
à Japon.

The next letter which is of interest to us and which we will reproduce here in full, is dated December 5, 1777, but unfortunately the address is missing. However, there is some reason to believe that it had been forwarded to the Cape, where THUNBERG would go ashore for the second time on his homeward journey (we may recapitulate from the "Introduction" that he left Ceylon in February 1778 and called at the Cape about the end of April). This may be also concluded from the beginning of this letter.

har jag riktigt fått och aflägger därför en wördsam tacksägelse. De som ligga för Herr Doctorns räkning hos mig, wärdar jag wäl och bewarar dem heligt med oupbrutna förseglingar. Som de ha Insecter på sig, så har jag lagt dem i en bakugn, med en naga graderad värme.

Fick Herr Doctorn den sändningen af 100 RiksDr. specie, som wettensk. academien på min persuasion sände genom ostindiska compagniet på Cap. b. sp. Jag fruktar at Herr Doctorn rest til Japan, innan skeppen komma. Men i den händelsen stå pengarna hos Gouverneuren i Cap, som man sagt.

Den högste Guden ledsage och beware Herr Doctorn på alla dess wägar, önskar jag som med all upriktigt wänskap lefwer

Högädle Doctorns
ödmjuke Tre

Stockh., d. 25 Dec.
1775.

P. J. Bergius.

BERGIUS writes as follows³⁷:

"Honourable and far-famed Doctor,

I write you this letter being doubtful whether the letter which I wrote to the Cape at the time, will reach you. In my letter (addressed) to the Cape I explained in detail the reasons which induce me to advise you to come home soon. For God's sake don't think of any further journeys, but rather think of your native country. It is necessary that you come home and undertake the office of Demonstrator (of botany) at Upsala, as Arch. Linné is on the brink of the grave and mentally and nearly physiologically dead.

They say that the younger von Linné is trying to join the Spanish botanical expedition that will make for America. According to that your presence (at Upsala) is urgent. But in case you need some money for the homeward journey, I have arranged so that the Academy of Science has given orders that you will be able to draw 300 Riksdaler at Cap. b. sp., at the time you set out on your homeward journey.

In my letter to the Cape I told as many items of news as I knew. I also said that I found your last letter from Batavia a little obscure and it seemed as if some hypochondria had troubled you. For God's sake reject such hypochondric ideas and try above all to keep your usual cheerfulness, briskness, activity and gentleness.

³⁷ Orig. Swedish text:

"Ädle och widtberömda Herr Doctor,

I owisshet om det bref jag i dessa dagar, skrifwit på Cap, råkar Herr Doctorn, skrifwer jag detta. I mitt Capska bref utförde jag widt och bredt de skäl, som föranlåta mig at högeligen tilstyrka Herr Doctorn at snart komma hem. Tänk för Guds skull ej på någon ytterligare resa, utan tänk snarare på fäderneslandet. Herr Doctorn behöfwer komma hem och tiltråda Demonstrators-sysslan i Upsala, särdeles som Arch. Linné är på grafwens brädd och både moraliter och nästan physiol död. Unga von Linné säges söka sig ut på den spanska botaniska expeditionen, som skall gå till America. Sålades är Herr Doctorns närwarelse nödig. Men i fall Herr Doctorn behöfwer pengar til hemresan, så har jag stält om, at Wet. Acad. har gifwit ordres, at Herr Doctorn i Cap. b. sp. skall få lyfta 300 sp. Riksdaler, då Herr Doctorn nemln. står på hemresan.

I mitt capska bref berättade jag så många nyheter jag wiste. Jag yttrade också huru jag fant Herr Doctorns sista bref från Batavia, något otydeligt, och syntes som någon hypochondre oroat Herr Doctorn. För Guds skull slå ändteln. bort alla sådana hypochondriska idéer och sök för all ting til at conservera sin wanliga munterhet, hurtighet, arbetsamhet, och saktmodighet.

Tack för japanska fröna. De kommo riktigt fram. Så kärkomna de woro, så blifwa dock sielfwa specimina mera kärkomna, i fall Herr Doctorn tackes continuera sin wanliga godhet med dupletters meddelande åt mig, som är onmätelig på örter. Herr Doctorn kan aldrig föreställa sig huru de örter han skickat mig roat mig. Han har tacksägelse och reconnaissance åt mig för hwarige ört, och jag hoppas at han skall finna mig wara en réele vän.

Min Bror låter hälsa. Han delar med mig smaken för natural historien. Herr Doctorn har också attacherat sig honom lika med mig.

jag framhårdar städse
Stockh. d. 5 Dec.

1777

Ädel och widtberömda Herr Doctorns
ödmjuke Tre

P. J. Bergius.

Thanks for the Japanese seeds. They came up well. So welcome they were, and still more welcome the specimens will be, if you, Herr Doctor, would feel like continuing your ordinary goodness by giving duplicates to me who is insatiable for plants.

You cannot imagine how the plants you sent to me have delighted me. Kindly accept my thanks and gratitude for every plant (which you let me have) and I hope that you will think me a real friend.

My Brother sends you his best respects. He shares my liking for natural history.

You have attached yourself as much to him as to me.

I am for ever

Stockh. d. 5 Dec.

Your humble

1777.

P. J. Bergius."

Then we came across two letters dealing with THUNBERG'S appointment as a supernumerary professor at Uppsala, one of them having been written by BENGT BERGIUS, the brother of P. J. BERGIUS already mentioned in the correspondence of November 6, 1774 and December 5, 1777.

BENGT BERGIUS (1723-1784) was in financial business and had a post that gave him the title of "Banko-Kommissarie Assessor." As appears from B. BERGIUS' letter which is dated December 18, 1781, State Councillor SCHEFFER was taking steps to have THUNBERG appointed as a supernumerary professor, with the idea that he would become the successor of CAROLUS LINNAEUS *filius*.

BENGT BERGIUS writes on the matter³⁸:

"However, he (Scheffer) said to have made a point of removing Linné and you becoming a professor with your salary as a Demonstrator, and Linné keeping his salary. He seemed to be sincere in this, moreover he was of the opinion Linné was not useful at Upsala. . . .

. . . I leave it now to your consideration, Herr Doctor, whether you should go to Stockholm for further discussions on the matter with State Councillor Scheffer. But this must not be done before he (Scheffer) comes with the King to Stockholm after Christmas, since I have³⁹ been

³⁸ Orig. Swedish text:

"Men han sade sig hafwa fått wilja at poussera idéen med Linnés bortflyttande, då han wil at Herr Doctorn skall med sin Demonstrators lön bli Professor, och Linné draga sin lön hit. Han syntes wara upriktig härutinnan, och han höll med at Linné ej war nyttig i Upsala. . . .

. . . jag lämnar nu til Herr Doctorns egit ompröfwande om han behöfwer resa in til Stockholm, för at sielf ytterligare tala med R. R. Scheffer; men det bör då ej ske förrän han med konungen efter hälgen kommer in, ty man säger mig at han om en eller annan dag reser til Gripsholm med konungen öfwer hälgen."

told that one of these days he will go with the King to Gripsholm in order to spend Christmas there."

The other letter, written by Prof. P. J. BERGIUS, is not dated, but was probably sent to THUNBERG at Uppsala towards the end of December 1781 or at the beginning of January 1782, since it contains the news of THUNBERG's appointment. The address we find on this letter already corresponds with his new dignity, viz.

Professor

Most honourable Herr Doctor

Carl P. Thunberg.

In this letter BERGIUS writes as follows³⁹:

"Very honourable Professor,

Good luck to you! State Councillor Scheffer has delighted me with the good news that last Thursday His Majesty has appointed you on Scheffer's proposal as a supernumerary *Professor*."

Some years later, May 30, 1785, P. J. BERGIUS addressed a short note to THUNBERG which reads as follows⁴⁰:

"Very honourable Professor,

I tender my humble thanks for the *Flora Japonica*: a big and stately book, with which I am exceedingly pleased. When shall we see your *Flora Capensis*? I was very glad to see the later classes inserted among the former ones, and the more I consider it, the more reason I find in it."

Address Sigillum: Professor Most honourable Herr C. P. Thunberg.

From a letter by P. J. BERGIUS, dated January 30, 1786, addressed to THUNBERG at Uppsala, it is learned that in the meantime THUNBERG had been made a Knight of the Royal Order of Vasa.

³⁹ Orig. Swedish text:

"Högädle Herr Professor,

Lycka til Herr Professor. RiksRåd Scheffer fagnade mig med den goda nyheten at Hans Mayt sistedne Torsdag, på RiksR. Scheffers proposition, gjort Herr Doctor Thunberg til *Professor extra-ordinarius*."

Addressed to:

Professorn

Högädle Herr Doctor

Carl P. Thunberg.

⁴⁰ Orig. Swedish text:

"Högädle Herr Professor,

Jag aflägger ödmjuk tacksägelse för *Flora Japonica*: en stor och ståtelig bok, som synnerl. roat mig. När få vi se *Flora Capensis*. Det roade mig hogeln. at se de senare classerne inspackade bland de förre, och ju mer jag öfverväger detta, dess mera raison finner jag deruti.

Stockh. d. 30 Maj. 1785."

Address Sigillum: Professorn Högädle Herr C. P. Thunberg.

The last of P. J. BERGIUS' letters we will quote here, is dated December 14, 1788 and runs as follows⁴¹ :

“ Very honourable Herr Professor
Knight of the R. Order of Vasa,

I tender my respectful thanks for your fine book that Dr. Fåhrens handed to me. I postponed my acknowledgment until I had perused your interesting itinerary. It gave me a complete idea of that part of the Cape you talked about (in your book). Many troubles you have suffered there, *inter alia* it was a great danger when the buffalos gored to death both the Sergeant's horses. It has been very trying to drive through those trackless regions. However, you were drawn by the “amor florum” and we profited from this!

God help you and bestow you joy for the fatigues you had to endure.
Stockh. d. 14 Dec. 1788. P. J. Bergius.”

Addressed to :

Professor Most honourable Herr Carl Pet. Thunberg
Knight of the R. Order of Vasa.
at Upsala.

The itinerary referred to in the above letter is his work “Travels,” originally written in Swedish, of which we will give fragments later on.

Another Swedish supporter of THUNBERG was LARS MONTIN, a provincial doctor at Halmstad, who started to collect plants during his academical life, first at Lund, later on at Uppsala. Finally he could boast of a collection of 5,000 species!

Dr. MONTIN received and described some of the plants THUNBERG had sent to Sweden, *inter alia* in 1773 the genus *Thunbergia* (= *Gardenia*

⁴¹ Orig. Swedish text :

“Högädle Herr Professor

Riddare af K. Wasa-Orden.

Jag aflägger wördsam tacksägelse för Herr Professorns wackra bok, som Dr. Fåhrens til mig öfverlämnade. Jag har dröjt med at aflägga min tacksägelse tils jag genomläst denna artiga Resebeskrifning. Jag fick en fulkomlig idé om den del af Cap, som Herr Professorn här omtalat. Många beswärligheter har Herr Professorn där utstått ; en stor fara war då buffeloxen ihjälstängade Sergeantens 2ne hästar ; mycken fatigue har det waret at öfwerfara dessa owägade marker. Men amor florum drog Herr Professorn, och det ha wi haft nytta af. Gud uppehålle Herr Professorn och gifwe honom hugnad för de fatiguer han utstått.

Stockh. d. 14 Dec. 1788.

P. J. Bergius.

Addressed to :

Professorn Högädle Herr Carl Pet. Thunberg
Riddaren af K. Wasa-orden.
i. Upsala.

Thunbergia, Thunb., vide footnote 33 at P. J. BERGIUS' letter of Oct. 21, 1774) under the heading "Thunbergia, Et nytt Ört-slägte från Cap (a new genus of plants from the Cape), in 1775 three new species of *Erica* and in 1777 two new species of *Diosma* (Rutaceae) from the Cape of Good Hope.

Now we come to CAROLUS LINNAEUS *filius*, who may be introduced here as a co-operator of THUNBERG. As already recorded, the latter was LINNAEUS *filius* successor as a professor of botany at the Uppsala University. We know that THUNBERG was very good friends with LINNAEUS senior, but if his relations with LINNAEUS the younger were as intimate is rather doubtful.

LINNAEUS *fil.* was born January 20, 1741 and died November 1, 1783, only five years after his father. He never joined the Spanish botanical expedition to America referred to in BERGIUS' letter of December 5, 1777, and we may assume he never seriously contemplated it. He did not retire as a professor before his death, but spent the last two years of his life travelling on the European continent (Germany, France, England, Holland) during which time THUNBERG held the office of a supernumerary professor of botany at Uppsala, as we have already seen.

Reverting to BENGT BERGIUS' letter of December 18, 1781, it appears that LINNAEUS *fil.* was not fully appreciated as a professor of botany at Uppsala, for they even wanted to replace him by THUNBERG. It is beyond dispute the younger LINNAEUS was a far less brilliant figure in botany than LINNAEUS senior and it appears to us that he shone mainly in the reflected glory of his famous father.

However, he has left a valuable work in his *Supplementum plantarum systematis vegetabilium* etc. (1781), which is not a mere continuation of a work including many new introductions from Surinam and the Cape, which his father had started but had not been able to finish owing to the poor state of his health followed by his death in 1778, but had been considerably enlarged with the descriptions of a great number of new plants he himself could add to it. The majority of these new contributions is due to THUNBERG, whose name is quoted for approx. 500 species in the Supplementum. Of these 500 species 12 originated from the Indies, 17 from Japan and the remainder—thus the greater part—from the Cape. However, THUNBERG is not only quoted here as the discoverer, he must also have supplied in most cases the names and diagnoses. On p. 47 of the Supplementum, under *Thunbergia*, Linnaeus *fil.* writes among other things: "Quantum illi (Thunberg) debeo plurimae paginae hujus Opusculi ostendunt . . ." ("How much I owe to him is shown by most pages of this Work"). And THUNBERG himself states in the Preface to

his *Flora Capensis* (1807), p. 15: "Supplementum Plantarum . . . ubi plures occurrunt Centuriae specierum novarum, quas cum Auctore, post meum in Patriam reditum, benevolentissime communicavi." ("Suppl. Plantarum . . . wherein several hundreds of species novae occur in which I have co-operated with the Author, after my return home, in a most friendly way"). At the same place it is recorded by THUNBERG that he had shared with the younger LINNAEUS several hundreds of new species. But he did not say anything of his shipments of plants to LINNAEUS senior.⁴²

That those parts of the *Supplementum* are the result of the joint work of the younger LINNAEUS and THUNBERG also appears from BÄCK's correspondence which we find quoted in JUEL's work, pp. 9—10. LINNAEUS *fil.* writes to BÄCK on July 30, 1779: "Thunberg has visited me nearly daily during the time that I was examining his plants." And BÄCK writes to THUNBERG in a letter dated December 29, 1780: "Prof. Linné has assured me both orally and in writing, that he is on most friendly terms with you, and he advanced as a proof that you co-operated with him in order to complete the *Supplementum*."

We did not find many letters written by THUNBERG himself, neither at Uppsala, nor at Stockholm.

In the Library of the R. Academy of Science we examined the copies of some letters THUNBERG had sent to P. J. BERGIUS, of which the originals belong to the collection of manuscripts of the Library of Uppsala University. We came across two letters THUNBERG wrote to BERGIUS at the time he was in Holland, viz. of September 15, 1771 (in which BERGIUS is requested to address his letters to the chemist Schultze at Amsterdam) and October 4, 1771. Then we noticed two letters from the Cape, dated May 27, 1772 and March 5, 1773. In this last letter THUNBERG talks about a packet of plants he had forwarded to the chemist Schultze at Amsterdam on February 2 and which contains "a palm of a new genus" ("palma, af ett nytt genus"), of which the Hottentots use the pith to make bread, while the other plants are *Gladioli*, *Gerania*, *Isiae*, etc.

This "palm" THUNBERG described in 1775 as *Cycas caffra*, nova Palmae species descripta (in *Nova Acta Regiae Societatis scientiarum Upsaliensis*, vol. II. Tab. V.) and in 1782 under the name *Zamia caffra*, Thunb. (in an article entitled "Beschrijving van twee nieuwe soorten van Palmboomachtige Gewassen, uit Japan en van de Kaap der Goede Hope;" (*Verhandelingen Hollandsche Maatschappij der Wetenschappen*, Haarlem, vol. XX: 2.).

Much later this plant, which is no palm at all, has been named *Ence-*

⁴² The above data have been taken from H. O. JUEL, *Plantae Thunbergianae*, p. 9 (1918).

phalaris caffer, (Thunb.) Miq., under which name it is known to this day.

It is rather curious to learn that THUNBERG originally placed this Cycad and allied species (*i.e.* the Japanese *Cycas revoluta*) among the Palmae, from which they greatly differ in their sexual characters.

Further it may be observed, that THUNBERG must have become familiar with the Dutch language during his sojourn at the Cape, considering the fact that he succeeded in writing an article in that language !

In the Library of the R. Academy of Science the original manuscript is kept of a letter THUNBERG sent to the Royal Secretary and Chevalier ("Kongl. Secretaren och Riddaren") PEHR WARGENTIN at Stockholm, after his return home from his 9-years journey. This letter, dated July 16, 1779, includes a summary of his travels reproduced with this article (*vide* part I (January 1939), plate 5, of this vol.), at the end of which he writes : "På Cap upptäcktes, utom många nya djur, mer än 1,000 nya species örter, . . .", which reads in English translation : "At the Cape I have discovered besides many new animals, more than 1,000 new species of plants, . . ."

(*To be continued.*)

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VOL V.

CARL PETER THUNBERG.
AN EARLY INVESTIGATOR OF CAPE BOTANY.

(With 1 Map.)

By MIA C. KARSTEN.

III.
TRAVELS.

WITH SPECIAL REFERENCE TO THUNBERG'S SOJOURN AT THE CAPE AND
HIS JOURNEYS INTO THE INTERIOR OF THE COLONY.

THUNBERG has recorded his impressions of travel in Europe, Africa and the far East in a four-volume work, published in different years. The original Swedish edition is entitled : *Resa uti Europa, Africa, Asia, förrättad Åren 1770-1779*. Upsala. 1 : a Del. 1788 ; 2 : a Del. 1789 ; 3 : e Del. 1791 ; 4 : e Del. 1793.

German, English and French translations, complete or fragmentary, soon followed the original edition, viz :

Reise durch einen Theil von Europa, Afrika und Asien, hauptsächlich in Japan, in den Jahren 1770-1779. Aus dem Schwed. von GROSSKURD. Berlin I, II, 1792-94.

Reisen in Afrika und Asien, vorzüglich in Japan, während der Jahre 1772 : 1779 auszugsweise übersetzt von K. SPRENGEL. Berlin 1792.

Travels in Europe, Africa and Asia. I-IV. London 1794-95.

Voyages de C. P. THUNBERG au Japon, par le Cap de Bonne-Espérance, des îles de la Sonde, etc. Trad. par L. LANGLES et revus quant à la partie d'histoire naturelle par J. B. LAMARCK. I-IV. Paris 1796.

Voyage en Afrique et en Asie, principalement au Japon, pendant les

années 1770-1779, servant de suite au voyage de SPARRMAN. Paris 1794.

In the Library of the Royal Botanic Gardens at Kew we examined the English translation, 3rd edition, published in 1795-96.

The complete title of this book is as follows :

Travels, in Europe, Africa and Asia, made between the years 1770 and 1779. In four volumes. By CHARLES PETER THUNBERG, M.D. Knight of the Order of Vasa. Professor of Botany in the University of Upsal.

The work was printed for F. and C. Rivington, No. 62, St. Paul's Church-Yard ; and sold by W. Richardson, Cornhill, and T. Egerton, Whitehall [London].

The first volume of this 3rd edition came out in 1795, the other ones in the year after.

The four volumes, which we found in very good condition, provide most fascinating reading, since THUNBERG gives a lively and well-detailed account of his experiences and adventures on his long and laborious journeys, including numerous interesting items in the field of natural history.

Vols. I and II are of the greatest value in connection with Cape botany, the third volume may be eliminated as dealing with Japan only, while the fourth and last volume provides *i.a.* some remarkable data with regard to his visits to British scientists towards the end of his homeward journey.

Apart from many fragments of this remarkable book illustrating most clearly the important part THUNBERG had in the botanical exploration of the Cape Colony, we shall quote any other data which may be of interest in connection with this work. In other words, an anthology of "Travels" with special reference to Cape botany will be given here.

TRAVELS, Vol. I (1795). Containing a *Voyage to the Southern parts of Europe*, and to the *Cape of Good Hope in Africa*, in the years 1770, 1771, 1772, 1773.

A complete summary of the contents of this volume may be useful : Preface ; Journey to Denmark, 1770 ; Trip to Norway, 1770 ; Voyage to Holland, 1770 (Amsterdam, Leyden) ; Voyage to France, 1770 (Rouen) ; Paris, 1771 ; France, 1771 ; Amsterdam, 1771 ; The Texel, 1771 ; Voyage to the Cape, 1772 ; The Cape, 1772 ; Paarl, 1772 ; The Cape, 1772 ; A journey into Caffraria, 1772 ; Return from Caffraria, 1772 ; The Cape, 1773.

The volume is illustrated with 3 plates, a frontispiece representing Table Mountain, and two plates inserted at the back of the volume, respectively representing the "Marmota Africana" (a very curious picture of the great white Cape mole) and various arms and implements of the Hottentots.

In this volume we find revealed some interesting data with regard to the contact THUNBERG had with outstanding Dutch botanists during his stay in their country (of special importance in connection with the BURMAN correspondence !), and the previous history of his journey to Africa and the far East, *i.e.* the people who were connected with his mission into those far-off quarters of the globe.

On pp. 15-16 (Amsterdam, 1770) we read : " On the 5th [of October], towards evening, we arrived at the populous and splendid commercial city of *Amsterdam*, which extends along the shore in the form of a crescent. The harbour is crowded with an incredible number of ships. . . .

On the 9th of October, I visited the Professors, Mssrs. *Burmans*, who received me in a very friendly manner. In my daily visits to them, I had not only the pleasure of surveying their different and numerous collections in natural history, and the advantage of their valuable library, in which the late celebrated Linnaeus put the last hand to his *Bibliotheca Botanica*, but was likewise invited every day to their tables, and requested to examine and give names to a great number of unknown minerals, insects, and plants, particularly of the grass and moss kind.

Here were some exquisitely beautiful petrifications and corals ; and the Library, so far as it related to Medicine and Natural History, might be said to be quite complete. This rendered my stay at Amsterdam both agreeable and useful ; and notwithstanding the advanced season, I should not have hastened from thence, had I not been deprived of my little stock of clothes and books, which, in my opinion, were both unjustly and imprudently kept in quarantain. It could not but be imprudent, to suffer a ship suspected of infection, to enter a harbour crowded with ships, and the crew to frequent the towns freely for several days, and afterwards to send the ship and cargo back to Texel to perform quarantain. It appeared likewise to be unjust, when there were no symptoms of infection on board."

As a matter of fact, THUNBERG has been forced to sail for France at an early date because of his luggage ! The Swedish agent, Mr. BAILLERIE, did not succeed in getting a permit to have the luggage forwarded to THUNBERG at Amsterdam. " But all I could obtain was a permit to get them at passing the Texel, if I should chuse to take a passage for France. Thus I was obliged to change my route, and subjected to considerable inconvenience and expence."

About his visit to Leyden THUNBERG writes (p. 18) : " The first thing I did in the morning of the 16th of October, was to visit Professor *David Van Royen*, who showed me his collection of plants from the Cape of Good Hope, and another which had lately been sent him from Ceylon."

On October 18 (p. 21) THUNBERG walked from Leyden to The Hague

from where he left for Amsterdam by "trekschuit" (tow-boat). On p. 22 we read that while he was waiting at Amsterdam for a vessel to convey him to Rouen, he daily visited Prof. BURMAN,⁴³ and made use of his library and cabinet of natural history. THUNBERG informs us that he found in BURMAN'S library (pp. 23-24) . . . "various collections of dried plants, from the East and West Indies, and Africa, but especially those of HERMANNUS and OLDENLANDUS,⁴⁴ which were bound." Immediately after this we are informed of the primary cause of THUNBERG'S long journey, for he tells us: "And as I arranged and described several plants belonging to the most comprehensive genera, such as *Ixiae*, *Ericae*, *Aspalathus*, &c. Professor BURMAN mentioned, that he would procure me an opportunity of making a voyage either to Surinam, or the Cape of Good Hope, at the expence of the States. I testified my sense of his friendly offer in the best manner I was able, and told him I would gladly accept it."

Needless to say THUNBERG did not fail to visit the botanic garden during his stay at Amsterdam. On p. 25 we find a short notice about it: "The botanic-garden⁴⁵ is situated near the town, is large and elegant, and contains several large orangeries and hot-houses, and a great number

⁴³ Undoubtedly Prof. JAN BURMAN (BURMANNUS) is meant here.

⁴⁴ HENRIC. BERNH. OLDENLAND (or OLDENLANDUS) was a Danish physician and botanist and a pupil of Professor PAUL HERMANN (HERMANNUS) of the Leyden University.

LINNAEUS informs us about OLDENLAND in his "Flora Capensis" p. 4; 1759, that "he was the second Botanist who visited the Cape of Good Hope and collected plants there, and his Herbarium is now in the possession of Burmannus, professor at Amsterdam" (. . . "secundus fuit Botanicus qui ad Caput bonae spei accessit et plantas ibi conquisivit, ejus Herbarium jam possidet cl. Burmannus, Prof. Amstelodamensis.") At the same place HERMANN was mentioned by LINNAEUS as the first botanist who saw the flora of the Cape with his own eyes. ("Primus fuit Botanicus qui propriis oculis Capitis bonae spei plantas visitaret, sub itinere in Zeylanam insulam"). (See also the Journ. of S.A. Botany, July, 1939, p. 88.)

Under the governorship of SIMON VAN DER STEL (1679-1699) the Company's garden at the Cape was in turn in the charge of OLDENLAND and another botanist of the name of JAN HERTOOG (or HARTOG).

We learn from LINNAEUS that OLDENLAND'S and other Cape collections were brought to Uppsala for his inspection by N. L. BURMAN, whose "Florae Capensis Prodromus," appended to his "Flora Indica" (1768), contains many references to OLDENLAND'S herbarium.

OLDENLAND also sent plants to J. PETIVER, a London chemist, who is known as an author on plants, animals and minerals.

OLDENLAND died some time before 1699, the exact date being unknown.

The above information is taken from the Journal of the Linnean Society. Botany, Vol. XLV, 1920-22, "Some early Cape Botanists and Collectors," by JAMES BRITTEN.

⁴⁵ This is the old *Hortus Medicus*, the later *Hortus Botanicus* of the Amsterdam University. The garden, now situated nearly in the middle of the town, stands in high repute for its beautiful and well-grown collections of plants, especially of S. African succulents (just as in olden times!) and insectivorous plants.

of succulent plants, and other curious productions from the Cape. The great American aloe (*agave Americana*) was in full blossom, and shown every day for money."

After having visited Rouen and Paris, THUNBERG arrived at Amsterdam for the second time towards the end of 1771.

On pp. 66-67 he writes among other things: "Since the preceeding year, when I stayed a few weeks at Amsterdam, and passed many agreeable hours in Professor BURMANN'S library and cabinet of natural history that gentleman had, during my stay at Paris, passed a great many encomiums on my knowledge in natural history, in the presence of some gentlemen at Amsterdam; and at the same time represented to them, how serviceable I should be to them, as lovers of curious exotic plants, if I could but have the opportunity of going, at their expence, to some of the northern parts of Asia, especially *Japan*, from whence we had no plants in Europe, although it was probable, that they would bear the climate as well as others lately brought hither in great numbers from North America.

These gentlemen,⁴⁶ who spared no expence for their fruit and pleasure-gardens, listened with pleasure to this proposal, and resolved to furnish me with the means and recommendations necessary for a voyage to Japan."

It was arranged that THUNBERG would sail for the Cape of Good Hope (the first halting-place on his journey) with a ship of the East-India Company, and on pp. 69-70 we read: "On the 10th of December, I had the honour of going with M. BEAUMONT the director, in the Company's yacht to the Texel,⁴⁷ where the ships, bound to different places in the East-Indies, lay ready, waiting only for the muster and a fair wind. I was amply provided with letters of recommendation to the Governor at the Cape, M. RYK TULBAGH, from M. RHEEDE VAN OUDSHORN, who, about Easter, was to go to the Cape in quality of Vice-Governor; and from the Burgomaster TEMMINK, as also from Professor BURMANN and his mother-in-law, to M. BERG, counsellor of police; and to M. NETHLING, secretary of the court of justice.

We did not reach the *Texel* before the next day."

Finally THUNBERG embarked on the "*Schoonzigt*," one of the vessels bound for the East Indies, and commanded by a Swedish captain, Mr. RONDECRANTZ from Sm'land.

⁴⁶ The names of these gentlemen we find recorded on p. 313 (Cape, 1773) of this vol.

⁴⁷ The Texel, the first and biggest of the Dutch Frisian islands (opposite the present naval base Den Helder).

On December 30, 1771, the ship sailed from the Texel with a favourable east wind that would hold for 24 hours.

The voyage to the Cape appeared to be rather prosperous, apart from an accident that might have put an untimely end to THUNBERG's life and consequently would have bereaved science of one of its brilliant practisers. In that case it would have been reserved to some other botanist to become the father of Cape botany!

Only 5 days after the ship had left the roads of Texel, on January 4, 1772, it happened (p. 79) that "among other dishes, there were served up at night, at the officers' table, some pancakes, for which the dominé or chaplain, as caterer, had given the flour out to the steward, and by mistake, or rather from gross stupidity, had taken almost one half of some white lead, which had been put into a pitcher, and set by in the cupboard, for the purpose of painting the ship; the extraordinary weight of which, however, did not excite any suspicion in him."

Curiously enough the cook did not notice at all that he had got the wrong stuff for the pancakes, and according to THUNBERG's description, they looked rather under-baked when they were served at supper! We will spare the reader the detailed description THUNBERG gives of the symptoms of poisoning manifested by himself, the officers and other people who had eaten those ill-dressed pancakes. Fortunately nobody died of it, but all suffered from the after-effects of the lead-poisoning till nearly the end of January.

Table Mountain came in sight on April 11, 1772, and on the 16th "we arrived safely in the road in Table Bay, dropt our anchor, fired our guns, and with mutual joy congratulated each other," as THUNBERG narrates on p. 98 of this volume. On the next page he continues: "In the road we found, among others, a Swedish ship, which had arrived but a short time before at this southernmost point of Africa, and had brought my friend, Professor SPARRMAN."⁴⁸ In Dr. C. A. BACKER's *Verklarend*

⁴⁸ ANDERS SPARRMAN, to whom we already referred in the chapter on the Thunbergian correspondence, was born at Tensta in Uppland in 1748, and died at Stockholm in 1820.

He was a medical candidate, but took a special interest in natural history.

From 1765-67 he made a journey to India and China. Though a rather young man for such an expedition, he had good results. However, on his return home he did not feel like becoming a botanist and he partly sold his Chinese collection. Later it happened that Captain C. G. EKEBERG offered him an opportunity to sail to the Cape of Good Hope. This induced him to study diligently natural history as well as to collect botanical and zoological objects, in order to have a perfect command of this science at the time he expected to come out to the Cape, viz. as a participator (together with Prof. FORSTER!) in Capt. COOK's second voyage round the world from 1772-75.

In 1775 he returned to the Cape Colony, which he peregrinated that year and the year after, and where he made large collections in the field of natural history.

Back in Sweden, he became a conservator of the Royal Academy of Science and was appointed Professor of natural history at Uppsala University in 1781.

Woordenboek, p. 540 (1936) we find erroneously stated that SPARRMAN travelled with THUNBERG to the Cape in 1772.

On the 17th of April THUNBERG went with the captain on shore and took a lodging at Mr. HENDRIK FEHRSEN's house.⁴⁹

Now we have reached THUNBERG's narrative of his experiences at the Cape, 1772.

On pp. 99-100 we read among other things: "Being safely arrived at the *Cape of Good Hope*, my first care was to wait on the lieutenant-governor, Baron JOACHIM VON PLETTENBERG, and the other gentlemen of the regency, to whom I was recommended, in order to deliver to them the letters I had brought with me. And as the respectable and universally-beloved veteran, Governor TULBAGH, had, in consequence of age and gout, on the 11th of August in the preceding year, exchanged this life for a better, I delivered the letters directed for him to Baron PLETTENBERG, who received me with the greatest kindness, and promised to assist me in my design of travelling into the interior part of the country, during the term of my residence in that quarter of the globe."

About Cape Town THUNBERG tells us *i.a.* (p. 102): "The houses are all of brick, white-washed and one, seldom two, but very rarely three stories high, and covered in for the most part with flat roofs of brick-work, or a kind of grass indigenous to this country (*restio tectorum*)⁵⁰ laid upon very low framework. On account of the violence of the winds that prevail here, the roofs cannot be tiled over, nor raised higher.

As to his literary work, SPARRMAN has recorded Captain Cook's voyage to the Cape. The work, originally written in Swedish, went through a French and a German edition. The French edition of this notable itinerary, which came out in Paris in 1787, is entitled *Voyage du capitaine Cook au Cap de Bonne Esperance*. (Traduit de l'original suédois par M. LE TOURNEUR.) The German translation (by GROSSKURD), which is less known, was published in Berlin by G. FORSTER in 1784.

The name of this contemporary of THUNBERG is commemorated in the genus *Sparmannia*, L. fil. (Tiliaceae.)

Captain C. G. EKEBERG, above mentioned (1716-1784), at first studied medicine. But later on he changed his career, became a sailor and made no less than ten voyages to the Indies and China with ships of the Swedish East-India Company, first as a mate, finally as a captain. He brought home many important collections of natural curiosities and in 1761 his merits were recognised by his election as a member of the Academy of Science. In the Academy's proceedings many contributions by his hand are to be found. (*Vide* Dr. C. A. BACKER, *Verklarend Woordenboek*, p. 191 (1936).)

In EKEBERG's opinion THUNBERG was not properly paid in the Dutch service. (*Vide* P. J. BERGIUS' letter to Thunberg of November 6, 1774.)

Prof. SPARRMAN honoured him by naming a new S. African genus *Ekebergia* (Meliaceae).

⁴⁹ It is beyond doubt that Mr. HENDRIK FEHRSEN is one and the same person as "Myn Heer Ferse" to whom Prof. P. J. BERGIUS directed his letters to THUNBERG, when the latter was at the Cape. (*Vide* his letters of November 6, 1774, and December 25, 1775.)

⁵⁰ *Restio tectorum*, L. fil. = *Dovea tectorum*, Mast. (Restionaceae).

The house of the lieutenant-governor, and the company's warehouse, were the only houses that were three stories high." . . .

On pp. 105-106 we find some interesting information about one of his fellow-travellers on his first journey into Caffraria, whose name is well-known in connection with the botanical exploration of the Cape, viz. Mr. ANDREAS AUGE.⁵¹ THUNBERG writes of him: . . . "Among others I visited M. Auge, the gardener, who has made many, and those very long, excursions into the interior part of the country, and has collected all the plants and insects, which the late Governor TULBAGH sent to Europe to LINNAEUS, and to the Professors BURMANN and VAN ROYEN. And as he still continued his journies yearly into the country, he sold to strangers, as well herbals as birds and insects. It was of him that M. GRUBB, the director of the bank in Sweden, purchased that fine collection of plants, which was afterwards presented to Professor BERGIUS, and so well described by this latter gentleman in his book of the *Plantae Capenses*. M. AUGE's knowledge of botany was not very considerable, nor did his collections in general extend much farther than to the great and the beautiful; but, in the mean time, we are almost solely indebted to him for all the discoveries which have been made since the days of *Hermannus, Oldenlandus, and Hartogius*, in this part of Africa."

⁵¹ JOHANN ANDREAS AUGE (1711- c. 1805) was a gardener living at the Cape, of whom PETER MACOWAN has given a very interesting account in his "Personalia of Botanical Collectors at the Cape," read before the S. African Philosophical Society, July, 1886, and published in its Transactions, Vol. IV, pp. xxx-liii (1887).

AUGE collected a large herbarium which was ultimately acquired by Prof. JAN BURMAN at Amsterdam, but in the above paper we find stated that "other sets of exsiccata of smaller extent appear to have been prepared by him for sale or gift to distinguished visitors touching at the Cape on the homeward voyage." There is little doubt that the numerous specimens from AUGE in the Banksian Herbarium were derived from one of these smaller collections.

Since he knew the country well, AUGE was most useful to THUNBERG as a guide. He took part in an expedition towards the north of the country, organised by Governor TULBAGH in 1761, as mentioned by THUNBERG in vol. II of this work, p. 201. This expedition on which also BRINK, a land surveyor, and RYKVOELS, a surgeon, were sent out, had for its object to find out about a people far into the north of the country "who wore linen clothes, were of a yellow colour, and went in and out of the mountains there, near a large river," probably a settlement of Portuguese, about which the Governor had had a report. THUNBERG tells us that part of the company, which was very numerous, left the Cape on the 16th of July, while the rest joined them near Olifant's River. They proceeded on their journey till the 6th of December, when they had penetrated into the north of the country to 26 deg. 18 min. latitude. Then they returned and arrived at the Cape on the 27th of April, 1762, without having discovered the yellow race they had been told of. In addition to this, THUNBERG observes: "This is the longest journey ever at tempted by Europeans towards this side, where the country is very dry, deficient in water, and mountainous, and the roads sometimes very stony."

When AUGE acted as a guide on THUNBERG's first journey into Caffraria he had reached the venerable age of 61.

Though THUNBERG had no very high opinion of his botanical knowledge, as we have seen, AUGE's merits must not be underrated. THUNBERG showed his appreciation by naming after him the S. African genus *Augea* (Zygophyllaceae).

About the Company's garden, enlarged and improved by Commander SIMON VAN DER STEL, and of which a part still remains adjoining the Government Avenue with its fine oak trees THUNBERG writes (p. 114) : "The company's garden is always open to the public. It is nine hundred and ninety-six paces long, two hundred and sixty-one broad, and has forty-four quarters, which are separated from each other by hedges, consisting, for the most part, of oaks or bays (*laurus nobilis*), several yards in height. I observed here, that a *royena villosa*,⁵² that grew beside one of these oaks, had fairly perforated one of its branches through the very trunk of the oak, in which it now grew like a parasitic plant. . . . In the menagerie were several rare and uncommon animals, and particularly great numbers of birds."

On p. 116 we find some interesting notes about the use of a few indigenous plants, viz. : "The seed-vessels of the silver-tree (*Protea argentea*)⁵³ serve for fuel; the *restio dichotomus*⁵⁴ (*besem riet*) for brooms.

Kukumakranka (*gethyllis*)⁵⁵ is the name given to the legumen or pod of a plant, that grew at this time among the sand-hills near the town, without either leaves or flowers. This pod was of the length of one's finger, somewhat wider at top than at bottom, had a pleasant smell, and was held in great esteem by the ladies. The smell of it resembled in some measure that of strawberries, and filled the whole room."

After having mentioned that on *Robben Island* a great quantity of shells are collected and made into lime for the Company's service (p. 117), THUNBERG gives evidence of some ignorance as to the geological formations of S. Africa, for he writes : "In the whole country there is no other lime to be found, nor any mountains containing either chalk or limestone." (Think for instance of the limestone formation of the Swartberg Range !)

Proceeding to Paarl, 1772, we read on pp. 121-122 : "In the beginning of July (this must be June, see below) I made a day's excursion to *Mount Paarl*, in company with Dr. *Le Sueur*, who was sent for to see a patient Dr. *Le Sueur* was a native of the Cape, but had studied in Holland, and taken his degrees at Groningen."

From pp. 128-9 (Paarl, 1772) some more notes on common species of Cape plants, especially on their use, may be quoted here, viz. : "The

⁵² *Royena villosa*, L. (Ebenaceae).

⁵³ *Protea argentea*, L. = *Leucadendron argenteum*, R. Br.

⁵⁴ *Restio dichotomus*, Thunb. = *R. triticeus*, Rottb. ??

⁵⁵ Kukumakranka, *Gethyllis spiralis*, Thunb. But according to THUNBERG's statement about its habitat, there is some reason to believe the plant in question was the Sand-kukumakranka, *G. ciliaris*, Thunb. (Amaryllidaceae).

leaves of the *Calla Aethiopica*,⁵⁶ a plant which grew even in the ditches about the gardens near the Cape, were said to serve for food for the (*yzervarken*) or porcupines.

The *geranium cucullatum*,⁵⁷ a fragrant plant, was used as an emollient, inclosed in small bags. . . .

The Hottentots eat the fruit of the *brabeium stellatum*,⁵⁸ a large shrub that grows near brooks and rivulets, called *wilde castanien* (wild chesnuts), and sometimes used by the country people instead of coffee : the outside rind being taken off, the fruit is steeped in water to deprive it of its bitterness ; it is then boiled, roasted, and ground like coffee."

On p. 134 (The Cape, 1772) THUNBERG narrates : " On the 30th of June I visited *Paradise*, and other farms belonging to the company, and situated below *Table Mountain*. *Rondebosch* is a villa belonging to the governor. On this eastern side, along *Table Mountain*, the south-east wind does not blow so hard as at the Cape, for which reason also both trees and shrubs grow here. Among other trees, the pine (*pinus sylvestris*⁵⁹) was conspicuous by its elegant crown. Wild vines (*wilde druyven*, *vitis vitiginea*⁶⁰) made a distinguished figure at this time with their red berries, which resembled cherries, and were eatable."

In the meantime THUNBERG was planning a journey into the interior of the Colony, and about a month after his trip to Paarl the necessary preparations were made for such an expedition which was by no means a light matter in those days.

On pp. 140-141 (The Cape, 1772) we read : " In the month of August the winter drew near to its end, and the fields began to be decorated with flowers ; it therefore now became necessary for me to think of such preparations as would be useful and requisite for me in my approaching long journey into the interior part of the country, a journey, relative to which a promise had been given me, that I should make it, in a great measure, at the company's expence.

I therefore provided myself with necessary clothes, as well as with boxes and bags, for collecting roots and seeds, with boxes and pins for insects, a keg of arrack for preserving serpents and amphibious animals, cotton and boxes for stuffing and keeping birds in, cartridge-paper for the

⁵⁶ *Calla Aethiopica*, L. = *Zantedeschia aethiopica*, Spreng.

⁵⁷ *Geranium cucullatum*, L. = *Pelargonium cucullatum*, Soland.

⁵⁸ *Brabeium stellatum*, Thunb. = *B. stellatifolium*, L.

⁵⁹ This is not *Pinus sylvestris*, L., the Scotch Pine, but very likely *P. Pinea*, L., the Stone Pine from the Mediterranean regions, with its most conspicuous umbrella-like crown.

⁶⁰ Probably *Vitis capensis*, Burm. is meant here, *V. vitiginea*, Thunb. = *V. repanda*, Wight et Arn.) being a Ceylon species.

drying of plants, tea and biscuits for my own use, and tobacco to distribute among the Hottentots, together with fire arms, and a large quantity of powder, ball, and shot of various kinds. Shoes for the space of four months were no inconsiderable article in this account, as the leather prepared in the Indies is by no means strong; besides that it is quite cut to pieces, or soon worn out, by the sharp stones that occur every where in the mountains.

My equipage consisted of a saddle horse, a cart covered with sail-cloth, like an ammunition-waggon, and three yoke of oxen, by which it was to be drawn through the whole of the journey. My travelling companions were AUGE, the gardener, who had before made eighteen journeys of different lengths into the country, and was now to be my sure and faithful guide; M. IMMELMAN, a youth, the son of a lieutenant in the army, together with LEONHARDI, a serjeant, who undertook this tedious journey for the sake of shooting the larger animals and birds; and, lastly, two domesticated Hottentots, one of whom was to drive, and the other to lead our oxen."

In order to retrace exactly the route THUNBERG followed on his three journeys into the interior of the Colony, as described in "Travels," the consultation of a detailed map of this part of Southern Africa was imperative, and we are greatly indebted to the "Nederlandsch Zuid-Afrikaansche Vereeniging" at Amsterdam, for the loan of sheets 6 and 9, representing the Cape Province, of the Topographical Map of the Union of South Africa.⁶¹ A thorough examination of this splendid map revealed most of the mountains, rivers, valleys, etc., we found recorded in "Travels." So we got a complete idea of the stretches THUNBERG covered on his peregrinations in the interior of the Colony and the coastal regions.

We must point out, especially to the non-S. African reader, that when examining the map of S. Africa, one will come across several rivers, mountains and valleys of the same name. So there are two Olifants Rivers in the Cape Province, of which the bigger one rises from the Witzenberg north of Tulbagh and flows into the Atlantic north of Lamberts Bay, while the other one rises from the Couga Mountains, takes its course through the Oudtshoorn valley and finally runs into the Gamka River; two Keurbooms Rivers (one near Swellendam and the other and bigger one flowing into Plettenberg Bay); several Doorn Rivers, of which the Doorn R., which rises from the Bokkeveld Karoo and empties itself

⁶¹ Topographical Map of the Union of South Africa (Topografiese Kaart van die Unie van Suid Afrika). Printed and published in the Union of S. Africa by the Government Printer. Pretoria 1937.

into Olifants R., and the Doorn R. and Great Doorn R., which both derive their source from the Outeniqua Mountains south of Oudtshoorn and unite with the other Olifants R. (one of the tributaries of the Gamka) may be mentioned here. Further there are several Salt Rivers and Palmiet Rivers, more than one Elands Kloof, several Paardebergen and Swartbergen, etc., etc.

Many of the localities as recorded in "Travels" show an incorrect or ancient spelling. We will give the names of the mountains, rivers, valleys, etc., as we found them marked on the map we used, with the names as recorded by THUNBERG following in brackets.

THUNBERG'S FIRST JOURNEY INTO CAFFRARIA (SEPTEMBER 1772-JANUARY, 1773).

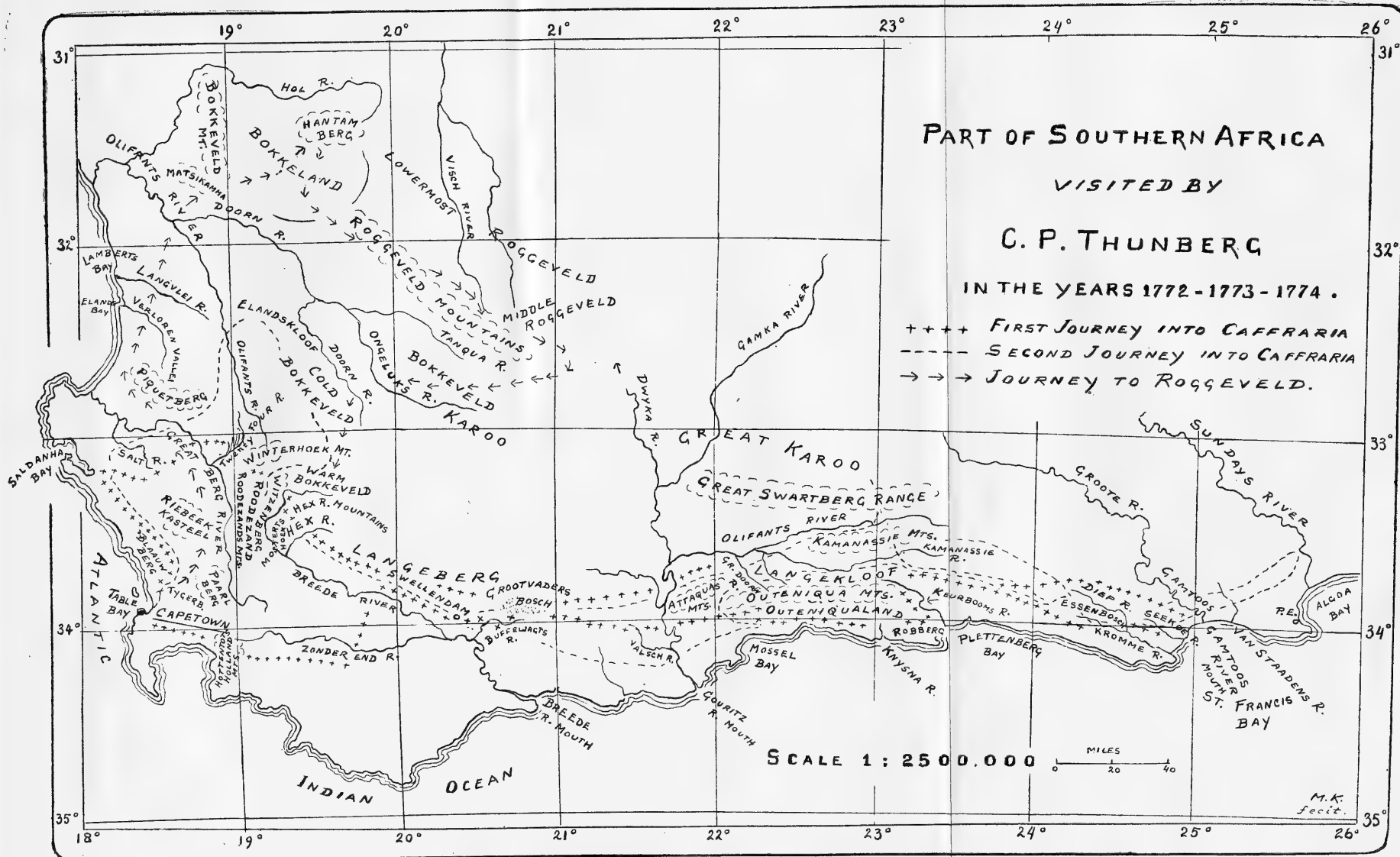
A summary of the route covered by him and his party on this long and successful journey which yielded many botanical discoveries may be given first.

The little caravan set out from the Cape on September 7. They first drove in the northward direction to *Saldanha Bay* (Saldahna B.) and *Great Berg River* or Groote Berg-Rivier; they ferried over the river and turned south-east: on the right side of the river *Riebeeck Kasteel* (Riebeck-Castle), "a high and large solitary mountain" (p. 152) was seen, to the left *Piquetberg* (Picket-berg). After having passed by the *Honingberg* and crossed the *Twenty Four Rivers* (Four and twenty river), they came to Kleinberg River (or little Mountain-river), and passed through Roodezands-kloof, and from there to *Roode Zand*.

According to THUNBERG *Roode Zand* is a valley, terminated to the northward by the high *Winterhoek Mountain* which divides it from Olifantskloof, and to the southward by the *Mostertshoek* (Vol. II, p. 31). East of Roode Zand arises the *Witzenberg* to which mountain THUNBERG made an excursion. On the topographical map this valley has not been marked, but we traced the Roode Zand Mountains, which enclose the valley on the west. Roode Zand must be at a little distance from Tulbagh.

Then they crossed *Hex River*, pursued their journey to *Keurbooms River* and finally arrived at *Swellendam*, whence they turned to the east, went across the *Buffeljagts River* and arrived at a farm of the Company named Riet Valley, in the vicinity of *Grootvadersbosch*.

Grootvadersbosch is a temperate rain forest on the southern slopes of the *Langeberg*, not far from Swellendam and Heidelberg, C.P. In the days of THUNBERG this wood covered a greater area than now-a-days.



Map showing THUNBERG'S journeys into the interior of the Cape Colony.

By the Author.

On the sketch-map of the part of the Cape THUNBERG travelled over, on p. 2 of JUEL'S *Plantae Thunbergianae* (1918) Grootvadersbosch has been marked too far eastwards, viz. in the close vicinity of *Gouritz River* (by which name one designates the lower course of the Gamka after its confluence with the Olifants R.).

Having passed over *Krakous River* and *Krakous Height* (Hoogte), they arrived at *Palmit River*, three localities we failed to trace on the above-mentioned map. Then they crossed *Soetmelkrivier* (Zoet-melks Rivier) in the Riversdale Division and visited a farm near *Valsch River*, a tributary of *Gouritz River*. They crossed the latter and passed by the *Attaquas* and *Outeniqua* (Hautniquas) *Mountains*, which they finally traversed in a northerly direction, in order to get to the *Langekloof*.

Having left the Hottentots behind with the oxen, THUNBERG and his two European companions made a round on horseback "through the verdant and woody country of the *Hautniquas*, which extended quite to the sea-shore." In this coastal area they passed by *Little and Great Brak Rivers*, crossed *Kaaimans River* (Quaimans Drift) and some more small streams emptying into the sea, i.e. the *Knysna* (Neisena) and *Koukuma Rivers*. Finally they arrived near the *Diep River* (Deep R.), a small tributary of *Keurbooms River*, and visited the *Robberg* (Robbeberg) near the sea-shore at *Plettenberg Bay*.

Then they proceeded up *Keurbooms River* to *Jackals Kraal* (Jackall's kraal) south of *Langekloof Mts.* and finally passed to *Langekloof* valley. From this valley they proceeded to *Kromme River* (which empties itself into St. Francis Bay) and came to the *Essenbosch* between *Diep River* and *Kromme River*. They penetrated as far eastwards as the mouth of *Gamtoos River*.

On December 6 they returned and crossed *Keurbooms River*. Then they came to *Doorn River* (Dorn rivier) and afterwards to *Great Doorn River* (Groote Dorn River) (both rising from the *Outeniqua Mountains* and confluent with *Olifants River*), keeping always to the right and leaving *Attaquas Kloof* to the left. They arrived again at *Riet Valley* and paid another visit to *Grootvadersbosch*. Proceeding on their journey they crossed *Brede River* and *Zonder End River* (Rivier Zonder end) and reached within three days the warm bath of "Zwarte Berg," which we identified as the *Swarberg*, near Caledon.

Later on passing by *Little Houwhoek*, they went over *Great Houwhoek* and *Hottentots Holland Kloof*. Then they reached the *Hottentots Holland Mountains*, which they crossed.

After having traversed the sandy plains at the other side of the mountains, they finally arrived again at Cape Town.

I. From the Cape to Saldanha Bay and Great Berg River.

After having left the Cape on September 7, they proceeded the same day to Jan Besis Kraal,⁶² a small grazing farm of the Company and situated near the sea-side. About the country they traversed on their way to this place, THUNBERG informs us (p. 143): "All over the sandy fields the *protea hypophylla*⁶³ was seen creeping and procumbent, with its leaves standing up erect on each side of it. Near *Eland's Fountain* (or Elk's Fountain) a plant of this species was seen standing upright like a brush, much resembling the former, but with broader leaves."

On p. 144 he continues: "... "The sandy and low plains, we traversed, abounded at this time in bulbous plants, besides others which were now sprung up in consequence of the heavy rains that had fallen during the winter, and which with their infinitely varied flowers decorated these other wise naked heaths." On the same page he narrates: "The roots (*bulbi*) of the *iris edulis*,⁶⁴ when boiled and served up at table, tasted much like potatoes. . . . The African flowers vary greatly as to colour, especially on the upper part, and are more constant on the under part." A little further we come across an interesting notice about Cape birdlife, viz.: "Flamingoes (*Phaenicopterus ruber*) were seen in abundance, wading every where in the ponds and puddles, in which were found also ducks and snipes (*scolopax capensis*)."

On p. 145 we read that the seed-vessels of a species of *Euphorbia*, pulverised, were used for poisoning wolves (Jackals?).

As to the botanical features of the country near Saldanha Bay, mention is made of one bulbous plant only (p. 146): "The *albuca major*⁶⁵ grew in this neighbourhood tall, straight, and elegant. Its succulent stalk, which is rather mucilaginous, is chewed by the Hottentots and other travellers, by way of quenching their thirst."

From Saldanha Bay they returned to Thee Fountain (p. 147); of the local vegetation of this area two plants are brought to our notice. On p. 148 we read: "Great complaints were made of the seedvessels of the *rumex spinosus* (dubelties),⁶⁶ which grew very common here, as the sharp prickles of them cut the feet of the slaves and others, who walked barefooted.

⁶² Jan Besis Kraal = Jan Biesjes Kraal, now Milnerton.

⁶³ *Protea hypophylla*, Thunb. = *Leucospermum hypophyllum*, R. Br. The upright form with broader leaves Thunberg talks about may be a distinct species.

⁶⁴ *Iris edulis*, L.f. = *Moraea edulis*, Ker. (Irid.).

⁶⁵ *Albuca major*, L. (Liliaceae).

⁶⁶ *Rumex spinosus* Thunb. = *Emex australis*, Steinh. (Polygonaceae).

"In wet years, the *pharnaceum mollugo* (muggekruid)⁶⁷ grows copiously here, and is said to make the cattle, that feed on it, very fat."

In the veld between Thee Fountain and Great Berg River they noticed a shrub bearing black berries, named Kraijebosch⁶⁸ by the colonists, since the crows feed on these fruits (p. 149).

II. From Great Brak River to Swellendam and Grootvadersbosch by way of Roode Zand.

About September 26 they arrived at Roode Zand, a farm inhabited by "DE VETT,⁶⁹ a descendant of one of the French families which came with the first colonists that settled in this part of Africa, to lay out vineyards and plant fruit-trees," as THUNBERG informs us (p. 153). During his stay at Roode Zand—THUNBERG took his lodgings with the farm people—a good deal of botanizing was done in this valley (between the high Winterhoek Mountains and the Mostertshoek), which is likely to have been named after the farm, and in the mountains near-by. We already know that THUNBERG made an excursion to the Witzenberg.

Among the plants indigenous in this region which caught THUNBERG's attention, were the Chinchinchees, *Ornithogalum thyrsoides*, Jacq., of which he writes (p. 153): "Tintirinties is a name given to a species with a white flower, from the sound it produced, when two stalks of it were rubbed against each other."

A little farther (pp. 156-157) he gives an enumeration of some more plants growing wild at Roode Zand apart from one cultivated species, with special reference to their use, viz.: "The *tulbaghia alliacea* (*wilde knofflook*, or wild garlic),⁷⁰ the root of which smells very strong of garlic, was reported to be a charm for serpents.

"With the poison of serpents and the juice of the *sideroxylon toxiferum* (*gift-boom*, or poison-tree)⁷¹ the Hottentots poison their arrows, which they use against antelopes and wild buffaloes, as also against their enemies. . . .

. . . . The *aponogeton distachyon* (*waater uynties*, or *water lilies*)⁷² grew in many places, in shallow puddles of water, very plentifully, and

⁶⁷ *Pharnaceum mollugo*, L. = *Mollugo oppositifolia*, L. (Choripetalae).

⁶⁸ Kraijebosch (Crow Bush): perhaps a *Royena*.

⁶⁹ De Vett, wrong spelling of DE WET.

⁷⁰ *Tulbaghia alliacea*, L.f. (Liliaceae).

⁷¹ *Sideroxylon toxiferum*, Thunb., syn. *Cestrum venenatum*, Thunb. = *Acokanthera venenata* (Thunb.) G. Don. (Apocynaceae).

⁷² *Aponogeton distachyon*, L.f. (Aponogetonaceae).

from its white flowers that floated on the water, exhaled a most fragrant odour. The roots roasted were reckoned a great delicacy.

Cucumbers, which were cultivated in the gardens, were served up at table, by way of desert, being pickled first in salt water, and afterwards in vinegar, with Cayenne pepper.

From a decoction of the *solanum nigrum* (or deadly night-shade)⁷³ and the *sonchus oleraceus* (or sow-thistle),⁷⁴ which were found growing wild near almost every farm-house, were formed, with wax and lard, some excellent salves, for healing of wounds and ulcers of all kinds, remedies which were as common as they were approved."

Then we come across an absorbing narrative of one of the most exciting botanical experiences THUNBERG had at the Cape (pp. 157-159) which we will quote here in full :

"A report that was very general at Roode-Zand, struck me with the greatest astonishment, and excited my curiosity in the highest degree. The inhabitants all assured me with one voice, that there was a bush to be found on the mountains on which grew various wonderful products, such as caps, gloves, worsted stockings, &c. of a substance resembling a fine plush. I importuned almost every body in the neighbourhood to procure me, if possible, some of these marvellous products, and I resolved not to leave the place till I should have unriddled this mystery. In the course of a few days, I had several of the leaves brought me down from the mountains, which were covered with a very thick shag or down (*tomentum*) and very much resembled white velvet. The girls, who were used to the management of these leaves, began immediately, with singular dexterity and nicety, to strip off this downy coat, whole and entire as it was, without rending it. After it had been taken off in this manner it was turned inside outwards ; when the green veins of the leaf appeared on one side. Accordingly, as the leaf was more or less round or oval, divers of the above-mentioned articles were formed out of it, the shape being now and then assisted a little by the scissar. The stalks of the leaves furnished stockings and ladies' fingered gloves ; the smaller leaves, caps. So that the matter was not quite so wonderful, as it was wonderfully related. But in the mean time it remained still for me to find out to what plant these leaves belonged, and this forced me to climb up myself the highest summits of the mountains, where they grow. The plant, indeed, was not scarce in those places but it cost me a great deal of trouble before I could find one in flower, or in seed, and when I did, I was convinced that this plant belongs to the genus of *bupleurum bup-*

⁷³ *Solanum nigrum*, L., a herb of world-wide distribution.

⁷⁴ *Sonchus oleraceus*, L. (Compositae).

leurum giganteum.⁷⁵ The downy coat, resembling fine wool, being well dried, was also used for tinder, and answered the purpose extremely well."

They stayed at Roode Zand for 10 days, for on p. 159 we read: "On the 6th of October having made here a fine collection of plants, birds, and seeds, and our cattle being perfectly refreshed, we left this beautiful spot."

They proceeded on their journey in south-eastern direction. On p. 163 mention is made of a species of *Mesembryanthemum* very common near *Hot-bath* (presumably Brand Vlei): "The *mesembryanthemum edule*⁷⁶ grew here in abundance, and especially in the sandy plains, and was called Hottentots figs (*Hottentots vygen*), the fruit when ripe and peeled, tasting tolerably well; it varies greatly in the colour of its blossoms, which are sometimes red; at other times carnation, yellow, or white."

On October 9 they passed over Maurice's Heights to Koorie,⁷⁷ and here THUNBERG got a glimpse of what is now called the Robertson Karoo, of which he writes (p. 163): "On the other side of this eminence were seen also the *Carrow Plains*, which are very dry, steril, and bare of grass, being covered with a great number of succulent plants only, and bushes.

The prickly bush of the *arduina bispinosa*⁷⁸ now bore ripe berries, which were said to be eaten by the Hottentots."

On pp. 164-165 THUNBERG gives some more notes on plants belonging to the vegetation of the Karoo and adjacent regions: "The *zygophyllum morskana*,⁷⁹ a handsome shrub, now adorned the hills with its blossoms, and appeared to be very proper for arbours."

The *kraals* they passed on their track they found "inclosed by felled trees, consisting of the *mimosa nilotica*⁸⁰ and *arduina bispinosa*, the most prickly of any almost in all Africa. . . . The *mimosa nilotica*, while it is cutting down, may sometimes happen to fall upon a man, and its prickles to enter deep into his body, on which occasion they may chance to break off, and stick fast in it."

On October 14 they proceeded to Riet Fontein, passed over Klaasvoogds River (CLAS VOGT's *Rivier*), which is to be found between Robertson and Ashton. It is a rather small river which derives its source from the Langeberg and empties into the Breede River. Of the plants

⁷⁵ *Bupleurum giganteum* (L.f.) Thunb. = *Hermas gigantea*, L.f. (Umbelliferae).

⁷⁶ *Mesembryanthemum edule*, L. (syn. *Carpobrotus edulis*, N.E. Br.).

⁷⁷ Maurice's Heights (or Maurits Hoogte) may be the present Mowers, where there is a low pass and a railway siding. Goree is a few miles west of Robertson.

⁷⁸ *Arduina bispinosa*, L. = *Carissa arduina*, Lam. (Apocynaceae).

⁷⁹ *Zygophyllum morskana*, L. (Zygophyllaceae).

⁸⁰ *Mimosa nilotica*, Thunb. = *Acacia Karoo*, Hayne, (Legum.).

THUNBERG found growing wild in this area, two species are quoted. On pp. 166-167 we read :

"The *viscum capense*,⁸¹ a parasitic plant, was seen disseminated every where on the branches of trees (especially of the *rhus*) by means of its berries, which the birds are fond of. . . .

. . . . The branches of the wax-shrub (*myrica cordifolia*),⁸² the berries of which are covered with a fat substance resembling bees-wax, were put whole into a pot of boiling water, in order to melt and skim off the wax. It resembles grey impure wax, is harder than tallow, and somewhat softer than wax. The farmers use it for candles, but the Hottentots eat it like a piece of bread, either with or without meat."

On October 17, passing by Bruyntjes River and Leeuwe River, they came to Keurbooms River (near Swellendam !), "which is so named from the trees (*sophora capensis*)⁸³ which grow near it in abundance," as Thunberg tells us on p. 167. And on the same page we find recorded the following interesting observations :

"An infusion of the root of *asclepias undulata*⁸⁴ was used as a remedy for the colic. . . .

. . . . The acrid berries of the *fagara capensis*⁸⁵ were used both here and other parts of the country in the colic."

Having crossed a broad river, viz. *Buffeljagts River* (which rises from the Langeberg and unites with Breede River), they arrived at a farm known as Riet Valley. "Not far from this farm of the Company's," as THUNBERG narrates on p. 169, "which particularly furnishes it with large timber, in a cleft in the mountains, stood a large wood, called *Grootvader's Bosch*, or Grandfather's Wood. . . . The forest was very thick and lofty, but unfortunately the trees at this season [the second half of October, M.K.] had neither blossom nor fruit on them, to satisfy my curiosity."

On the same page we find some notes on three kinds of wood the colonists used for cabinet work, yielded by this forest, viz. :

"*Camassie-hout*⁸⁶ was a very fine sort of wood, used for the borders of chests of drawers, and of other pieces of furniture.

⁸¹ *Viscum capense*, L. (Loranthaceae).

⁸² *Myrica cordifolia*, L. (Myricaceae).

⁸³ *Sophora capensis*, L. (the Keurboom) = *Virgilia capensis*, Lam. (Leguminosae).

⁸⁴ *Asclepias undulata*, L. = *Xysmalobium undulatum*, R. Br. (Asclep.).

⁸⁵ *Fagara capensis*, Thunb. = *Bursera capensis*, (Thunb.) Ind. kew. (Rutaceae).

⁸⁶ Camassie-wood = *Gonioma Kamassi*, E. Mey. (Apocynaceae).

Stink-hout (stink-wood),⁸⁷ which resembles the walnut-tree, and is used for making writing-desks and chests of drawers.

Geel-hout, or yellow wood (*Ilex crocea*)⁸⁸ is a large tree, the wood of which is very heavy, more or less of a pale yellow colour, and is used for making tables."

On the next page the following records are of interest in connection with our subject: "A species of pepper (*Piper capense*)⁸⁹ that was found in abundance in the wood here, was called by the country people *staart pepper* (or tail-pepper) and was used by them as a spice." And proceeding to the natives, the author informs us that their bodies were powdered with a powder of *bucku* (*diosma*).⁹⁰

III. From Grootvadersbosch to Langekloof and Gamtoos River by way of Outeniqualand.

From Grootvadersbosch they pursued their journey in an easterly direction. They got to the plains near *Vet River* (Vett Rivier), where . . . "the aloe-tree (*Aloe perfoliata*)⁹¹ from the leaves of which the gum aloe distils, grew in greater abundance than I ever observed it to do in any other place," as THUNBERG informs us (p. 171). At the same place we find recorded that the sheep were feeding here on various poisonous plants, "such as the *Rhus lucidum*,⁹² *Lycium afrum*,⁹³ &c."

Then they came to *Attaquas kloof* (between Herbertsdale and Mossel Bay?) and of the plants THUNBERG observed in this area, two species are brought to our notice, with special reference to their use, viz.:

"The wood of the olive-tree (*Olea capensis*),⁹⁴ which was white and very heavy, served to make chairs of." (p. 172). The leaves of the

⁸⁷ Stinkwood = *Ocotea bullata*, E. Mey. (Lauraceae).

⁸⁸ *Ilex crocea*, Thunb. = *Elaeodendron croceum*, DC. (Celastraceae). This is the "saffraanhout" tree, the true "geelhout" (yellow wood) being *Podocarpus Thunbergii*, Hook. (Taxaceae).

⁸⁹ *Piper capense*, L. fil. (Piperaceae).

⁹⁰ *Buchu* is still gathered wild in the Cape, and consists of the dried leaves of many Rutaceae, including some species of *Barosma*. The Buchu plant referred to by Thunberg was very likely *Diosma crenata*, L. = *Barosma crenulata*, Hook.

⁹¹ *Aloe perfoliata*, L.; Thunberg Diss. Aloe 1785. This is presumably *Aloe ferox* Mill.

⁹² *Rhus lucidum*, L. (Anacardiaceae).

⁹³ *Lycium afrum*, L. (Solanaceae).

⁹⁴ *Olea capensis*, L. (Oleaceae).

*Atragene vesicatoria*⁹⁵ were used by the country people in this and other places instead of *cantharides*” (pp. 174-5).

Later on they passed by Little and Great Brak River and came to Zout-fontein. From there they proceeded to Keerom River and of the plants he found growing wild near-by THUNBERG mentions the *Anthyllis*,⁹⁶ without giving a specific name. On p. 176 he writes: “Of the bark of the *Anthyllis*, the Hottentots have the art of making ropes, by means of which they ascend trees, as by a ladder, when they want to get honey out of them.” A few pages further (p. 181) we are informed of the fact that the spear of the Hottentots is made of the *Assagay wood* (*Curtisia faginea*).⁹⁷

On pp. 184-185 THUNBERG gives a detailed and thrilling narrative of the accident referred to in P. J. BERGIUS’ letter of December 14, 1788,⁹⁸ which caused the death of both the sergeant’s horses.

This story, from which it is learned that THUNBERG himself had a narrow escape, may be quoted below with exception of some expatiations which render it unnecessarily long and which for that reason can well be omitted.

On the preceding page we find more information about the route followed by THUNBERG and his party, from which we may conclude that the unhappy meeting with the outrageous buffalo (there was but one buffalo, in contradiction of the statement in BERGIUS’ letter) took place in the woody country of the Knysna district and very likely on the southern slope of the Outeniqua Mountains. For THUNBERG writes: “At the dawn of day, on the 3d of November, we set out again on our journey, and crossed several rivers, such as the *Krakadou*, *Ao*, *Koukuma* and *Neisena*. The woods we passed through were narrow and full of prickly bushes. . . . AUGE, the gardener, having travelled this way before, was now our guide, and we had left the Hottentots with our oxen behind us. In the afternoon we arrived at *Koukuma Rivier*. We forded over one of its branches, and intended to pass through a thicket to a farm which we discovered on an eminence (p. 184) on the other side of this thicket, belonging to one HELGERT MULLER;”

Now we come to the story of their nasty experience with a wild Cape buffalo: “but we had not advanced far into the wood before we had the misfortune of meeting with a large old male buffalo, which was

⁹⁵ *Atragene vesicatoria* = *Knowltonia vesicatoria*. (L.f.) Sims. (Ranunculaceae).

⁹⁶ *Anthyllis*. (Not identified.)

⁹⁷ *Curtisia faginea*, Ait., the “Assagay Hout.” (Cornaceae).

⁹⁸ *Vide* Journal of S. African Botany, Vol. V, July, 1939, Carl Peter Thunberg, etc. II, p. 101.

lying down quite alone, in a spot that was free from bushes, for the space of a few square yards. He no sooner discovered AUGE, who went first, then roaring horribly he rushed upon him. The gardener turning his horse short round, behind a large tree, by that means got in some measure out of the buffalo's sight, which now rushed straight forwards towards the serjeant, who followed next, and gored his horse in the belly in such a terrible manner, that it fell on its back that instant. . . . The gardener and the serjeant in the mean time had climbed up into trees, where they thought themselves secure. The buffalo after this first achievement, now appeared to take his course towards the side where we were approaching, and therefore could not have failed in his way to pay his compliments to me, who all the while was walking towards him, and in the narrow pass formed by the boughs and branches of trees, and on account of the rustling noise these made against my saddle and baggage, had neither (p. 185) seen nor heard anything of what had passed. As in my way I frequently stopped to take up plants, and put them into my handkerchief, I generally kept behind my companions, that I might not hinder their progress, so that I was now at a small distance behind them.

The serjeant had brought two horses with him for his journey. One of them had already been dispatched, and the other now stood just in the way of the buffalo, who was going out of the wood. As soon as the buffalo saw this second horse, he became more outrageous than before." In brief it may be mentioned that the buffalo also killed this horse in a most ferocious manner. After his detailed description of the horse's death THUNBERG continues: "Just at the moment that he was thus occupied with this latter horse, I came up to the opening, where the wood was so thick, that I had neither room to turn my horse round, nor to get on one side. I was therefore obliged to abandon him to his fate, and take refuge in a tolerably high tree, up which I climbed.

The buffalo having finished this his second exploit, suddenly turned round, and shaped his course the same way which we had intended to take."

Then THUNBERG looked around for his companions, and seeing not a vestige of them, nor hearing them, he started to shout after them. And it is not without a touch of irony, when he writes (p. 186): . . . , "I discovered these magnanimous heroes sitting fast, like two cats, on the trunk of a tree, with their guns on their backs, loaded with fine shot, and unable to utter a single word." Moreover THUNBERG informs us that AUGE the gardener was so strongly affected, that he could scarcely speak for some days after!

After having crossed the Pisang River, one of the small coastal rivers emptying into Plettenberg Bay, they arrived at the seashore. THUNBERG

narrates that the adjacent mountains were covered with shrubs and bushes of various kinds, particularly with the *Arduina bispinosa*, in such measure that in several places they were impenetrable.

As one of the most important botanical features of the coastal areas of the south-eastern Cape Province may be mentioned the *Strelitzia augusta*, Thunb., a plant belonging to the family of the Musaceae, which the early colonists mistook for a wild banana; to its occurrence in the vicinity of Pisang River this river owes its name. THUNBERG came across this plant with its attractive flowers of most singular shape (hence the common name "Bird-of-Paradise Flower" given to this and allied species), when he visited Robberg near Plettenberg Bay. On pp. 191-2 he writes about it: "The *Strelitzia*, with its yellow flowers and blue *nectarium*, grew near this spot, and was one of the most beautiful plants, of which the bulbs were procured to send to Europe. The Hottentots were said to eat the fruit of it."

Though THUNBERG does not give the specific name, there is no doubt about the identity of this species, considering the locality. Since the *Strelitzia* is not a bulbous plant, the "bulbs" THUNBERG talks of, must be the more or less fleshy rhizomes. Moreover, he was wrong in his description of the colour of the flowers, which applies to *S. Reginae*, not to *S. augusta*.

Then they rode on to Diep River, Leeuwebosch River (Leuwe bosch rivier) and so to Seekoe River. In this area the very characteristic and decorative *Encephalartos* forms part of the landscape. We know that THUNBERG originally included this Cycad (under the generic name of *Zamia*) and the Japanese *Cycas revoluta*, Thunb. among the Palmae. His information about this plant, its occurrence and use, is full of interest, viz.: "The Bread-tree (*Zamia caffra*)⁹⁹ is a species of palm, which grows on the hills, below the mountains, in these tracts. It was of the height and thickness of a man at most, very much spread, and single. I have sometimes seen from one root, two or three stems spring. It is out of the pith (*medulla*) of this tree, that the Hottentots contrive to prepare their bread. For this purpose, after scooping out the pith, they bury it in the earth, and leave it there for the space of two months to rot, after which they knead it, and make it into a cake, which, in their usual slovenly and filthy manner, they slightly bake in the embers. I

⁹⁹ Described in 1775 as *Cycas caffra*, nova Palmae species descripta (in Nova Acta Regiae Societatis scientiarum Upsaliensis, vol. II Tab. V) and in 1782 under the name *Zamia caffra*, Thunb. (in an article entitled "Beschrijving van twee nieuwe soorten van Palmboomachtige Gewassen, uit Japan en van de Kaap der Goede Hope;," (Verhandelingen Hollandsche Maatschappij der Wetenschappen, Haarlem, Vol. XX: 2.

Much later this plant was named *Encephalartos caffer*. (Thunb.) Miq.

observed that the tree stood in dry sterile places, between stones, and grew slowly."

On next page THUNBERG writes about the country they were passing : " The ridge of mountains, which at *Roode zand* we had on our left hand, and afterwards in *Lange kloof* on the right, and which were continued quite from *Witsenberg*, now terminated here before it reached the sea-shore ; whereas the ridges on our left hand were continued farther, and had the *Carrow plains* behind them."

It is quite evident THUNBERG had reached now more arid regions, because of the following representatives of the native vegetation he brings to our notice : " The berries of the *Guarri bush* (*Euclea undulata*)¹⁰⁰ had a sweet taste, and were eaten by the Hottentots. Bruised and fermented, they yield a vinegar, like that of Pontac.

The *Crassula tetragona*,¹⁰¹ as being somewhat of an astringent nature, boiled in milk, in the quantity of a handful, is used as a remedy for the diarrhoea."

On p. 207 the medical use of one of the indigenous Leguminosae is mentioned : " The beans of the *Guajacum afrum*,¹⁰² though a poisonous shrub, are boiled and eaten by the Hottentots."

IV. Return from Caffraria.

After having crossed Keurbooms River, they came to Kamanassie Land (Camenassie Land). Here THUNBERG observed in the veld a most remarkable fungous plant, of which he writes (p. 211) : " The *Lycoperdon carcinomale*¹⁰³ grew here on the ant-hills, the brown powder of which was said to be used in cancers."

¹⁰⁰ *Euclea undulata*, Thunb. (Ebenaceae), one of the typical Karoo shrubs, with hard, leathery leaves. The *Guarri* grows to a height of 6-10 feet.

¹⁰¹ *Crassula tetragona*, L.

¹⁰² *Guajacum afrum* (L.), syn. *Schotia afra*, (L.) Thunb. = *Schotia speciosa*, Jacq. (Legum.).

¹⁰³ An essay by P. A. VAN DER BYL, M.A., D.Sc., on " The Fungous Flora of the Western Province of the Cape," in *Botanical Features of the South-Western Cape Province* (published on the occasion of the visit to South Africa of the British Association for the Advancement of Science, July, 1929) provides some additional information about the fungus THUNBERG noticed on the ant-hills. With regard to its place in the vegetable system, we find that it is a fungous plant belonging to the class of the Gasteromycetes and the family of Podaxaceae. VAN DER BYL writes about it : " mention should be made of *Podaxon carcinomalis*, the so-called " kraaisnuif," which grows only on termite heaps and is of historic interest for it was described by LINNAEUS as early as 1781 from a collection by THUNBERG, the father of South African Botany."

It is beyond doubt that *Podaxon carcinomalis* and *Lycoperdon carcinomale* (wrongly spelled as *Lycyperdon*) are one and the same species.

On the same page THUNBERG narrates: "On the 13th (of December) we crossed the barren *Carrow plain*. . . . The sheep here ate the tender leaves of the *Mimosa nilotica*.¹⁰⁴ . . . A *Mesembryanthemum*, with a white flower, was chewed by the Hottentots, for the purpose of quenching their thirst, after it had been suffered to putrefy, and been properly prepared."

On p. 213 some records are given about THUNBERG's second visit to Grootvadersbosch: "I hoped now to find several trees in blossom; but the season was not yet far enough advanced [about the middle of December, M.K.].

The *Calodendron*,¹⁰⁵ however, was then in blossom, the honeyed juice of which I perceived beautiful butterflies sucking, without my being able to reach either the one or the other. But by the help of my gun, which I loaded with small shot, and fired in among the trees, I got some branches with blossoms on them."

After having crossed Breede River, and Zonder End River, they proceeded along the latter river, and came to another post of the Company's, Zoete melk's valley. Of the plants they came across in this part of the country, two species are mentioned (pp. 214-215), viz.: "*Psoralea pinnata* (*Pinnucortel*)¹⁰⁶ was a plant, of which the country people in many places complained, as being the worst weed in the gardens, on account of the roots striking deep and firm in the ground, and consequently being difficult to eradicate. . . . Wild chesnuts (*Brabejum stellatum*)¹⁰⁷ are so eagerly devoured by the wild boars, that they seldom or ever leave one on the ground to spring up, unless it should chance to fall between stones."

After descending the Hottentots Holland Mountains the little caravan kept New Year's day 1773, of which THUNBERG writes on p. 218: . . . "and, together with almost all the inhabitants of the neighbourhood, (we) went down to the sea-side to pass the whole day

The name *Lycoperdon* is applied to a distinct group of species, belonging to the same class of fungi; with some allied genera the gen. *Lycoperdon* forms the family of Lycoperdaceae.

P. carcinomalis must have a wide distribution, considering that it occurs in the south-western Cape Province as well as in the south-eastern part of the country where THUNBERG has found same.

¹⁰⁴ *Mimosa nilotica*, Thunb. = *Acacia Karoo*, Hayne.

¹⁰⁵ = *Calodendron capense*, (L.f.) Thunb. (Rutaceae). By some authors, *i.a.* by JUEL in his "Plantae Thunbergianae," the name of this genus is spelled *Calodendrum*.

¹⁰⁶ *Psoralea pinnata*, L. (Leguminosae).

¹⁰⁷ *Brabejum stellatum*, Thunb. = *Brabejum stellatifolium*, L. (Proteaceae).

in mirth and pleasure." (This was presumably at the present Somerset Strand.)

In addition to this he tells us that they found here, thrown up by the surge, the "*Trumpet-grass*" (*Fucus buccinalis*)¹⁰⁸ in which they (the country people who spent the day with him) blew like a trumpet."

Finally, having spent a whole day in crossing the very level and extensive sandy plain (the Cape Flats) that lies between the Hottentots Holland Mountains and the Cape, THUNBERG and his party arrived at Cape Town on January 2, 1773.

THE CAPE, 1773.

On p. 219 THUNBERG begins a description of an excursion to the summit of *Table Mountain* he made in the company of M. SONNERAT, a Frenchman, introduced by him as "an excellent draughtsman who had accompanied M. COMMERÇON in that capacity in his extensive travels round the world."

THUNBERG made acquaintance with M. SONNERAT at the house of M. BERG, Secretary of the Police, where he stayed together with the Frenchman for a few weeks "for the sake of botanizing, and of shooting a great number of beautiful Cape birds for the cabinets of the curious in Europe."

They undertook their excursion to Table Mountain in the middle of January. They set out at three o'clock in the morning, at a little after eight they reached its summit, where it was moderately and agreeably cool, as THUNBERG informs us.

About their botanical experiences on this mountain-trip THUNBERG gives the following narrative (pp. 219-221):

"We were also recompensed for our trouble by a great number of rare plants, especially of the *Orchideae*, as they are called, which I never afterwards could meet with either here at other seasons, or indeed at all in any other mountain. Among these the *Orchis grandiflora*,¹⁰⁹ or *Disa uniflora* (Bergii *Plantae Capenses*) was conspicuous by its beautiful flowers; of the *Serapias tabularis*¹¹⁰ we found only one specimen; the *Serapias melaleuca*¹¹¹ was distinguished by its black and white flowers,

¹⁰⁸ This plant, a very common sea-weed, and one of the larger thalloid forms, was later named *Ecklonia buccinalis*. It is known under the common name of sea-bamboo.

¹⁰⁹ *Disa uniflora*. Berg. (Orchid).

¹¹⁰ *Serapias tabularis*. (L.f.) Thunb., syn. *Cymbidium tabulare*, (L.f.) Sw. = *Eulophia tabularis*, (L.f.) Bolus.

¹¹¹ *Serapias melaleuca*, Thunb. = *Disa melaleuca*, (Thunb.) Sw.

the most uncommon in nature ; and with great difficulty, and at the hazard of my life, I got for the first and last time the blue *Disa longicornis*,¹¹² which is as beautiful, as it is singular in its form. This last plant grew in one spot only, on a steep rock, and so high up, that in order to come at it after we had clambered up the side of the rock as high as we could, I was obliged to get upon the shoulders of *M. Sonnerat*, when, with a long stick, I beat down five of these plants, the only specimens that were then in bloom. *M. SONNERAT*, who before had not had an opportunity of collecting as many plants at the foot of the mountain as I had, made in this one day only, a collection of 300 different species ; but was so singularly unfortunate, though he had brought with him three pair of shoes for this excursion, as to return bare-footed," (thanks to "the sharp angular stones which are rolled down from the mountain and lie both at its foot and in the clefts through which the road goes, which tear the soles and the upper-leathers.").

So much for the climbing of Table Mountain.

The next fifty pages are interspersed with stray notes concerning the vegetation of the Cape and the adjacent country. These notes, which yield a wealth of interesting information and are of a most varied character, may be quoted here successively according to the pages.

Pp. 243-244 : "Round the hills near the Cape grew the *Cliffortia ruscifolia*,¹¹³ and the *Borbonia lanceolata*,¹¹⁴ much resembling juniper trees, and like the *Polygala Heisteria*,¹¹⁵ with their sharp leaves pricking the foot passengers ; while the *Asparagus Capensis*,¹¹⁶ with its recurved thorns, tore their clothes and retarded their passage, for which reason it has received from the inhabitants the name of *Wakt en beetje*, Stop a bit.

The *Tulbaghia alliacea* (Wilde knoflook, or Wild garlic)¹¹⁷ which grew both in the sands near the Cape and in other places in the country, was used in hectic fevers, either boiled in water or in some kind of soup."

Page 249 : "Near *Muysenberg* (or Mouse mountain) the wax-shrubs (*Myrica quercifolia* and *cordifolia*)¹¹⁸ grew in abundance along the shore.

¹¹² *Disa longicornis*, Thun. = *Disa longicornu*, L.f.

¹¹³ *Cliffortia ruscifolia*, L. (Rosaceae).

¹¹⁴ *Borbonia lanceolata*, L. (Leguminosae).

¹¹⁵ *Polygala Heisteria*, L. = *Muraltia Heisteria*, (L.) DC. (Polygalaceae).

¹¹⁶ *Asparagus capensis*, L. (Liliaceae).

¹¹⁷ *Tulbaghia alliacea*, L. (Liliaceae).

¹¹⁸ *Myrica quercifolia*, L. ; *M. cordifolia*, L. (Myricaceae).

The berries of them are quite round, full of knobs, soft, and of the size of a pea. The berries themselves are quite black, but covered with a farina of a whitish-grey colour. They are gathered in their ripe state in the month of March, and boiled in water till all the white powder is melted off, and floats on the surface of the water like fat; this, when skimmed off and cooled, grows hard, almost like wax, and is of a greenish-grey or ash colour. The farmers use it for candles, when they get any quantity of it, and the Hottentots eat it like so much cheese."

Near *North Hoek* (Noord Hoek), which they reached when crossing the mountains from Hout Bay, also bushes of the wax-shrub, *Myrica cordifolia*, were found, as Thunberg informs us on p. 267. They grew there on the dunes, which consisted all of loose sand, raised into hills of various heights. These bushes were frequently found growing on the hills themselves in a low and creeping habit.

Passing on to p. 285 we read: "The baboons of Table Mountain, besides paying frequent visits to, and plundering the gardens of the Europeans, feed also upon the pulpous bulbs of several plants, which, after digging up, they peel and eat. . . . The *Gladiolus plicatus*¹¹⁹ appears to be the most favourite plant with those that live near the Cape, for which reason also this plant is known by the name of the *Baboon*."

Page 286: "The great white African Mole (*Marmota Africana*), the size of which is nearly equal to that of a cat, feeds on several sorts of bulbous roots that grow in these sandy plains in abundance, especially *Gladioluses*, *Ixias*, *Antholyzas*, and *Irises*.¹²⁰ . . .

. . . . The *Moraea undulata*¹²¹ never opens before nine o'clock in the morning, and before sun-set, at four in the afternoon, it closes again.

The *Ixia cinnamomea*¹²² (*Avondbloem*, *Canelbloem*) opens every evening at four, and exhales its agreeable odours through the whole night.

The approach of rain is announced by the flowers of various bulbous plants, such as the *Ixias*, *Moraeas*, *Irises*, and *Galaxias*, the tender flowers of which do not open in the morning, if (p. 287) rain is to be expected soon; and if a shower is to fall in the afternoon, they close some time before.

Several of these likewise diffuse an agreeable fragrance, particularly at evening or night, somewhat like the odour of pinks, but fainter

¹¹⁹ *Gladiolus plicatus*, Thunb. Diss. Glad. 1784 = *Babiana plicata* Ker, known as the *Baviaantje*.

¹²⁰ *Irises* = various species of *Moraea*.

¹²¹ *Moraea undulata* (L.) Thunb. = *Ferraria undulata*, L. (Iridaceae).

¹²² *Ixia cinnamomea*, L.f. = *Hesperantha cinnamomea* (L.f.) Ker. (Irid.).

such are the *Gladiolus tristis* and *recurvus*, the *Ixia pilosa*, *falcata*, and *cinnamomea*.¹²³

The *Earth-rose* (Aard-roos) was the name by which the inhabitants both of the town and country distinguished the *Hyobanche sanguinea*,¹²⁴ a plant with a low deep-red flower, which is scarcely of a finger's length, and has neither branches nor leaves. It grows in winter and spring in the low sandy plains, both near the town and elsewhere towards the sea-shore, pushing only its cluster of blood-red flowers above the ground. The *Antholyza ringens*,¹²⁵ with its gaping flower, and the ever-varying *Gladiolus plicatus*,¹²⁶ which decorate these sandy plains in abundance, have their pulposus bulbs deep down in the sand, and do not raise their flowers much higher than the *Hyobanche* above the surface of the ground.

During the winter months, three beautiful species of *Gardenia* were blowing in the company's garden. The *Gardenia florida*¹²⁷ was probably brought hither from the Indies; at least in my travels in this southernmost angle of Africa, I never perceived (p. 288) it growing wild anywhere, but always planted in the gardens, and that even among the colonists far up in the country. . . . The *Gardenia Rothmannia*,¹²⁸ which has less conspicuous flowers than the former, and of which both the flowers and fruit, on being dried, always turn black. The *Gardenia Thunbergia*,¹²⁹ with respect to its bloom, is one of the finest trees in the world. This little tree had been brought a few years before from the forests of the country, where it is scarce and grows very slowly, the wood being at the same time so hard that on this account it is used for clubs. This tree, after it has once begun to blossom, continues to blow for several months, producing fresh blossoms every day, as fast as the old ones by degrees fade and droop, and at length fall off. The blossom is almost six inches long, white and thick, like the most beautiful wash-leather, of an agreeable odour, and does not lose its white colour. . . .

¹²³ *Gladiolus tristis*, L.; *Gladiolus recurvus*, Thunb. = *Hesperantha radiata* (Jacq.) Ker.; *Ixia pilosa*, L.f. = *Hesperantha pilosa* (L.f.) Ker.; *Ixia falcata*, L.f. = *Hesperantha falcata* (L.f.) Ker.; *Ixia cinnamomea*, L.f. (vide footnote No. 122).

¹²⁴ *Hyobanche sanguinea*, L. (Scrophulariaceae), a parasitic plant, growing on the roots of *Lycium* &c.

¹²⁵ *Antholyza ringens*, L. (Iridaceae).

¹²⁶ *Gladiolus plicatus*, Thunb. Diss. Glad. 1784. = *Babiana plicata* Ker.

¹²⁷ *Gardenia florida*, L. = *G. jasminoides*. Ell., a species native from Japan. (Rubiaceae).

¹²⁸ *Gardenia Rothmannia*, Thunb., a species indigenous to the Cape.

¹²⁹ *Gardenia Thunbergia*, Thunb. (Cape).

. . . . The wood that is used for dressing their victuals in the kitchen is nothing but brushwood (p. 289), being got with no less pains than expence from the smaller trees and bushes."

THUNBERG, after having made some enquiry concerning this matter, found that the following were the most commonly employed for this purpose: the stems and roots of the *Protea grandiflora*, *conocarpa*, *speciosa*, *hirta*, *mellifera*, and *argentea*,¹³⁰ a few species of *Erica*, and some sorts of *Brunia*.

On p. 289 and following pages the medical use of various Cape plants has been recorded.

Pp. 289-290: "Many *Gerania*,¹³¹ with their red and pulpous roots, grew in the sandy plains near the town; and as these roots are of an astringent nature, the country people used them in the diarrhoea and dysentery.

The root of the *Bryonia Africana*¹³² was employed both as an emetic and a purge.

The roots of the *Asclepias undulata* (Bitterwortel) and *Crispa*,¹³³ as well as the whole of the herb *Eriocephalus*,¹³⁴ were used for the purpose of expelling urine in the dropsy.

For the same purpose also they frequently made use of the root of the *Haemanthus coccineus*,¹³⁵ instead of squills, or the *Scilla maritima*.¹³⁶ The plant is very common on the hills below the mountains, and hence has obtained the name of the *Mountain-squill*. Its root is large, white, mucilaginous, fibrous, and somewhat acrid. After being cut into slices it is steeped in vinegar, and from this is made a kind of weak *Oxymel scilliticum*, which is used in dropsies and asthmas.

The *Polygonum barbatum*,¹³⁷ which grows in ditches, and is of an acrid nature, is, like its kindred species, used for dropsical and swelled legs.

¹³⁰ *Protea grandiflora*, Thunb.; *Protea conocarpa*, Thunb. = *Leucospermum conocarpum*, (Thunb.); *Protea speciosa*, L.; *Protea hirta*, L. = *Mimetes hirta*, (L.) Knight; *Protea mellifera*, Thunb. (the so-called "Suikerbos"); *Protea argentea*, L. = *Leucadendron argenteum*, (L.) R. Br.

¹³¹ *Gerania* = various species of *Pelargonium*.

¹³² *Bryonia africana*, Thunb. = *Kedrostis nana*, Cogn. (Cucurbitaceae).

¹³³ *Asclepias undulata*, L. = *Xysmalobium* (L.) R. Br.; *Asclepias crispa*, Berg. = *Gomphocarpus crispus*, (Berg.) R.Br. (Asclep.).

¹³⁴ *Eriocephalus*, L., a genus belonging to the Compositae.

¹³⁵ *Haemanthus coccineus*, L. (Amaryll.).

¹³⁶ The "Mountain-squill" cannot be identical with *Scilla maritima*, L. = *Urginea maritima*, Baker, which is a Mediterranean species. The plant THUNBERG speaks of may be *Urginea altissima*, Baker.

¹³⁷ *Polygonum barbatum*, L. Introduced from Japan.

A decoction of the leaves of the *Crotalaria perfoliata*¹³⁸ was esteemed a powerful diuretic, and in consequence of this property, to cure dropsies."

Pp. 291-292: "The *Adonis Capensis*¹³⁹ and *Atragene vesicatoria* (*Brandblad*)¹⁴⁰ used instead of *Cantharides*: these plants grew on the sides of the mountains and hills and were exhibited in the sciatica and rheumatism.

The *Adiantum Aethiopicum* (*Vrouwehaar*),¹⁴¹ a species of maidenhair, grew chiefly on the sides of the *Devil's mountain*,¹⁴² and was drank as tea, in colds and other affections of the breast.

The *Protea mellifera* (*Tulp-boom* and *Zuyker-boom*) contains in its calyx a sweet juice, which, when inspissated, was used in disorders of the breast.

Further, we read on p. 292: "The *Salicornia fruticosa* (*Zee koral*, or sea coral)¹⁴³ grew on the sea-shore, and notwithstanding its brackish taste, was eaten by the soldiers and some few others as a sallad, dressed with oil and vinegar."

On next page THUNBERG informs us that "from the *Oxalis cernua* (*wilde Syring*),¹⁴⁴ which grew to the greatest size and in the greatest abundance of all the species appertaining to this genus, was prepared a good and serviceable *Sal acetocellae* (or salt of wood-sorrel)."

This series of short notes may be ended with the following record—non-medical—which we found on p. 310:

"The *Galena Africana*¹⁴⁵ was known under the appellation of *Kraalbosch*, and in some places was used for fences about the inclosures for their cattle, when no other bushes fit for the purpose were to be had."

Although this first journey into the interior of the Colony had very good scientific results, and the party had returned safe and sound to Capetown after their long and tedious expedition, on which great fatigues had to be endured and dangers to be overcome, bad luck and severe trouble were not spared THUNBERG, as is learned from the following quotations from pp. 313-315:

¹³⁸ *Crotalaria perfoliata*. Probably *Rafnia perfoliata*, E. Mey. (Leguminosae)

¹³⁹ *Adonis capensis*, Thunb. = *Knowltonia gracilis*, DC. (Ranunculaceae).

¹⁴⁰ *Atragene vesicatoria* = *Knowltonia vesicatoria*, (L.f.) Sims.

¹⁴¹ *Adiantum aethiopicum*, L. (Filices).

¹⁴² Devil's mountain = Devil's Peak, a lesser peak of Table Mountain.

¹⁴³ *Salicornia fruticosa*, L. (Chenopodiaceae).

¹⁴⁴ *Oxalis cernua*, Thunb. (Oxalid.).

¹⁴⁵ *Galena africana*, L. (*Galena*, incorrect spelling). (Aizoaceae).

“ The month of *September* (1773) was already begun, and the beautiful and flowery spring making its appearance, put me in mind of preparing for a long journey up the country. But here more obstacles and disagreeable circumstances threw themselves in my way than I could ever have imagined. The trifling viaticum I had brought with me from Europe, I had long ago consumed, and in the seventeen months which I had passed here, I had received no supplies from Holland. At Amsterdam, indeed, I had great and powerful patrons in the Burgomasters RYK TEMMINK and VAN DER POLL, together with the Privy councillors VAN DER DEUTZ and TEN HOVEN, by the persuasions and the expence of whom I had undertaken this long voyage ; but to my great misfortune, both of the governors, TULBAGH and RHEEDE VAN OUDSHOORN, to whom I was strongly recommended, and from whom I had reason to expect every support, had departed this life, the one dying previously to my arrival at the Cape, and the other in the voyage thither. I was therefore a stranger, in an unknown place, and left to myself and to my fate till my friends at Amsterdam could be informed of my situation, and endeavour to better it. Misfortunes seldom come single ; and I had now my double portion of affliction for when I intended to take up my salary from the company, it appeared that the ship in which I had arrived was come without its muster-roll. This was therefore first to be brought from Europe, before any one could receive his pay. When the ship sailed from the Texel, the visitation officers in their hurry had forgot to deliver in the muster-roll, and the captain to demand it. The consequence of this was, that none of all those that were engaged on board the ship could, during the space of two or three years, either obtain their pay or leave to go home.

The preceding year I had been obliged to contract debts to a considerable amount, and had now no other resource left than to increase them, especially if I were to be enabled to undertake another expensive journey into the country, and not to remain an idle spectator at the Cape. I therefore again had recourse to M. BERGH, the secretary of the police, who had not only hitherto kindly assisted me with his purse, but also generously opened it to me on this occasion, and thereby enabled me to make another excursion into the interior part of the southernmost point of Africa.”

So we see that in spite of his financial trouble THUNBERG was enabled to undertake a second expedition.

About the European who would be his companion on this journey, and their equipment, THUNBERG writes as follows (p. 316) :

“ For my fellow-traveller I had an English gardener, of the name of MASON, [*sic.*] who had been sent hither by the King of England to collect

all sorts of African plants for the gardens at Kew. Mr. MASON arrived the year before, in the same ship in which Captain Cook, with the Professors FORSTER and SPARRMAN, were to make their celebrated voyage round the world, and towards the southern pole. He had arrived at the Cape after I was set out on my journey to Caffraria; and shortly after this he made an excursion into the country, accompanied by Mr. OLDENBURG,¹⁴⁶ who went with him, partly as his companion and partly as his interpreter. Mr. MASON was well equipped with a large and strong waggon tilted with sail-cloth, which was driven by an European servant, upon whom he could depend. We had each of us a saddle-horse, and for our waggon we had several pair of oxen."

TRAVELS, Vol. II (1796). Containing *two expeditions* to the interior part of the country adjacent to *The Cape of Good Hope* and a voyage to *The Island of Java*; performed in the years 1773, 1774, and 1775. The third edition.

The volume is illustrated with 4 plates, inserted at the back of this volume. On plate I we find represented a Kaffir necklace, a Javanese kris and a musical instrument of the Hottentots, the korà; on plate II various Javanese krises; on plate III a Javanese sabre in scabbard, a Hottentot string of differently coloured glass beads to wear about the

¹⁴⁶ About FRANZ PEHR OLDENBURG, a fellow-countryman of THUNBERG, already referred to in the biographical notes on FRANCIS MASSON in the first part of this work (*vide* Journal of S. African Botany, Vol. V, January, 1939, pp. 21-22) we find some notes in JAMES BRITTEN's article "Some early Cape Botanists and Collectors" (Journal of the Linnean Society, Botany, Vol. XLV, 1920-22), which may be quoted here.

In his *Flora Capensis*, 1823, X, THUNBERG describes him as follows: "Oldenburgh, Suecus, a memet incitatus et eruditus, in Campis Urben circumjacentibus comes saepe meus indefessus Anno 1772 fuit, et eodem anno iter cum D. Masson instituens, plantarum copiam collegit. Anno 1774 insulam Madagascar adiit, ubi febris maligna correptus diem obiit supremum." ("In the year 1772 Oldenburgh, a Swede, brisk and cultivated by nature, was often my tireless companion in the country surrounding the town; and in the same year, when undertaking a journey with Mr. MASSON, he collected a great number of plants. In 1774 he went to the Island of Madagascar, where he was stricken by a malignant fever from which he died.") As a matter of fact it was first proposed that the voyage to Madagascar should be undertaken by THUNBERG, who recommended OLDENBURG, "who had been practising botany for the space of two years that he accompanied me in my excursions," to go as Surgeon's mate. THUNBERG writes further, that his recommendation was taken, and "Mr. Oldenburg even made several collections of plants, but did not live to return from so unwholesome and scorching a climate."

According to a MS. note by ROBERT BROWN in the Banksian Herbarium, OLDENBURG was a private soldier. BANKS acquired about a thousand specimens collected at the Cape by OLDENBURG in 1772; they are numbered, but not named, and were originally mostly on small separate sheets, but are now incorporated in the Herbarium; they are often referred to in the Solander MSS.

LESSING named after him the handsome S. African genus *Oldenburgia* (Compositae).

neck, and on plate IV a Hottentot string of beads, a Hottentot string of glass beads, and a pair of Pinang scissors.

THUNBERG'S SECOND JOURNEY INTO CAFFRARIA (SEPTEMBER 1773-
JANUARY 1774).

A summary of the route covered by THUNBERG and his party on this journey which they extended as far East as the Sundays River, may be given first.

They set out on their journey on September 11, and directing their course to the north, they first arrived at Jan Biesjes Kraal (Jean Besis Kraal) at a little distance from Capetown. Then they came to Riet-valley. On the right, as they passed along in northerly direction, lay the *Tygerberg* (Tiger mountains) and on the left the *Blaauberg* (Blue Mountains). Having passed by Dassenberg (South of Contreberg) they arrived at the company's post at Groene Kloof. Proceeding on their journey always in a northerly direction, they passed *i.a.* Reebokskop, *Contreberg* (Konterberg), *Baviaansberg* (Baboons Mountain), while the level country presented to their view *Riebeck Kasteel* (Riebeck Kasteel), *Twenty Four Rivers Mountains* (Four and twenty Rivers Mountain) and *Piquetberg*.

Finally they arrived at *Saldanha Bay* (Saldahna B.), from where they pursued their journey to Witteklip (? We could not trace this locality on the map we used) and afterwards went to a farm on the Salt River, a tributary of Great Berg River.

Gradually they penetrated farther up into the country, along and beyond the *Swartberg* (Black Mountain) which is likely to be the Swartberg South of Piquetberg.

After having crossed the Great Berg River and traversed the Kardouw Pass, THUNBERG and his English companion travelled with the wagon some distance down the Olifants River, passing the hot springs, where there was already a bathing establishment. After an accident to the wagon, however, they turned round and proceeded through the long vale, called *Eland's Kloof*, across the mountains to a farm in the *Cold Bokkeveld*, (Coude Bockeveld), which is "situated between the lowermost, or Warm Bockeveld, and between Olyfant's kloof and Carroveld," as stated by THUNBERG. So they had turned now in a southerly direction. After having traversed a great deal of the *Warm Bokkeveld*, they came to DE WET's farm at *Roode Zand*. Here they stayed for about a week—this time THUNBERG took the opportunity to climb Winterhoek mountain. Proceeding on their journey, they crossed *Brede River*. Then they left

this river to the right, and "the level flat country which here lies about the stream, and is at times inundated by it, is called *Goudena*."

After having crossed *Hex River*, they went to *Swellendam* (Zwellendam). Then directing their course eastwards, they proceeded on their journey to a farm across Gouritz River (Goud's rivier). From there they hastened on to *Mossel Bay* (Muscle bay) to a delightfully situated farm belonging to old Mr. BERNARD.

From Mossel Bay they travelled up towards the mountains (Attaquas and Outeniqua M.) into Hartequas Kloof (now Robinson Pass). Through this kloof they got into a more plain and level country, called Cannaland or Canaan's land, which we did not find marked on the map we used. Then they crossed *Brakke River* (Brack rivier), which derives its source from the Outeniqua M. and unites with Kamanassie River just before Kamanassie Dam, as marked on a modern map. They likewise went across *Matjes River*, a small tributary of Kamanassie River, which also derives its source from the Outeniqua M. They went through Matjes Kloof, where the *Langekloof* begins. "The land in Lange kloof," as THUNBERG informs us, "is bare and without any shrubs or bushes, but abound much in grass."

From Langekloof they proceeded to *Essenbosch* (between Kromme R. and Diep R.). Then they went down to the Kromme River country. They proceeded to *Seekoe River* (Zeeko-rivier) and afterwards crossed *Gamtoos River*, "which at this time formed the boundaries of the colony, and which was not suffered to extend farther. This was strictly prohibited in order that the colonists might not be induced to wage war with the courageous and intrepid Caffres."

In the meantime they had reached the woody country of what later became the Port Elizabeth division. THUNBERG went out to see whether the trees of the woods, of which this part of the country consisted, had yet any blossoms upon them. The morning following (December 18) they pursued their journey to the great *Sundays River*. Then they set out on their journey back to the Cape, not by the same way by which they had come, but by the upper road to *Van Staadens River* (van Stade's rivier), a small coastal river emptying into St. Francis Bay, and from there to Seekoe River.

In the Christmas holidays they proceeded on their journey up towards Kromme River and Langekloof. Then they rode turning to the right over the mountains to a farm near Riet-valley in *Kamanassie Land*, a tract of country that lay before the Kamanassie Mountains.

THUNBERG now made up his mind to take a view of the Great Karoo at the other side of the Swartberg Range north of the Kamanassie Mountains. "In order to have a view of the country on the other side of the

mountains, I climbed up to their highest summits, and saw, at no great distance, a ridge of mountains, which was lower than this that I stood on, and, between these, the country was as broad as Lange kloof, and consisted of hills and vallies. The tract of country that lay behind the lower ridge was flat and poor Carrow-land, and so long and broad, without any mountains, that the eye could not reach its boundaries," as we find recorded on p. 100.

The drivers and the Hottentots were ordered to go on with the carts through Hartequas (?) Kloof and wait at Riet-valley, while THUNBERG and MASSON made a tour on horseback over the dry Karoo, and afterwards proceeded through Platte Kloof. But here they lost their way in the Karoo, had to sleep in the open veld, near a large fire of Canna-bushes (*Salsola aphylla*).¹⁴⁷ In the morning they found their horses disappeared, but fortunately they discovered them behind some heights. Finally they reached the house of a farmer, where they passed the night. Afterwards they made their way to Hartequas (?) Kloof, where they met with their people and carts. From there they proceeded on their journey to *Gouritz River*, and afterwards they arrived at Riet-Valley near *Groot-vadersbosch*.

Later on they passed through *Swellendam* and from there they directed their course to the Cape, where they arrived safe and sound at the end of January, 1774, after having crossed some smaller streams (*i.a.* Palmiet and Steenbrasemey R.) and the *Hottentots Holland Mountains*.

I. Botanical notes on the Cold Bokkeveld, Winterhoek and Roode Zand

In the second half of October, 1773, they had reached the Cold Bokkeveld. From the vegetation of this area two species are quoted. On p. 24 THUNBERG narrates: "Near the mountains are sometimes seen a few low and scattered trees of the *Protea grandiflora* species (*Waageboom*)."¹⁴⁸ And on pp. 26-27 one of the most interesting insectivorous plants, endemic at the Cape, is brought to our notice: "Among the few shrubs that grew in the mountains, I found here that curious shrub the flybush (*Roridula dentata*),¹⁴⁹ the leaves of which are covered with fine hairs, and a tough glutinous substance to which smaller insects adhere. It is placed in the houses for the purpose of catching flies."

¹⁴⁷ Canna- or Ganna-bush, *Salsola aphylla*, L. (Chenopodiaceae).

¹⁴⁸ *Protea grandiflora*, Thunb., the Wagenboom or Waa'boom.

¹⁴⁹ *Roridula dentata*, L. (Droseraceae).

After having traversed the Warm Bokkeveld for the greater part, they got to Roode Zand by way of Mostertshoek.

As we have already recorded, THUNBERG made an excursion to Winterhoek Mountain. We may quote here from p. 32, that in the mountains at Winterhoek which THUNBERG examined more carefully than in the previous year, he found the flybush growing in abundance, . . . and the scarce plant, called *Protea nana*,¹⁵⁰ the flower of which resembles the dog rose, was found only in this place." A little farther he writes that among other rare plants he found here was the *Disa coerulea*.¹⁵¹

Among the botanical features of Roode Zand valley a single species is mentioned (p. 34), viz. : "The *Ixia bulbifera*,¹⁵² a bulbous plant with a red flower, grew here in the greatest abundance. When one approached the place where it grew, it seemed to be but thinly scattered over the field, but, at a distance, the ground appeared as if it were covered with scarlet cloth."

From Roode Zand they rode in south-eastern direction and crossed Hex River. As to the character of the country they passed along, Thunberg informs us (p. 35) that "it was of the Carrow kind." Further he writes that the sheep were said to feed here on the *Mesembryanthemums* (*vygebosches*), which were supposed to render the dung of these animals unfit for manure ! (p. 36).

II. Botanical notes on the country near Langekloof, Kromme River and Seekoe River.

On p. 60 we find recorded that on November 30 THUNBERG and his party proceeded to Essenbosch, "a pretty little neat wood which has acquired its name from the large trees *Essenboom* (or *Ash Trees*, *Ekebergia capensis*)¹⁵³ that grew here ; the leaf of which greatly resembles that of the European ash (*Fraxinus*). Large fig-trees too (*Ficus capensis*), the fruit of which is eaten by the baboons, grew here in abundance."

On December 1 they went down the Kromme River country, "which takes its name from *Kromme rivier* (the *crooked river*) that runs meandering through it," as THUNBERG informs us. Moreover, he writes (p. 61) that Kromme River valley is a mere continuation of Langekloof.

¹⁵⁰ *Protea nana* (Berg.) Thunb. = *P. rosacea*, L., the mountain-rose or skaam blom.

¹⁵¹ *Disa coerulea* (?). We failed to trace this name. The species THUNBERG found at Winterhoek might have been *Disa graminifolia*, Ker. ; syn. *Herschelia coelestis*, Lindl., the beautiful blue *Disa*.

¹⁵² *Ixia bulbifera*, L. = *Sparaxis bulbifera*, (L.) Ker.

¹⁵³ *Ekebergia capensis*, Sparrm. This African tree and the European Ash are no kindred species, the former belonging to the Meliaceae, the latter to the Oleaceae.

Later on they proceeded to Seekoe River, and, as in the previous year, special attention was paid to the "Bread-tree," *Encephalartos caffer*, Miq., formerly known under the name of *Zamia caffra*, and the information THUNBERG gives about this Cycad on pp. 66-67 of this volume, forms a most interesting addition to his records in vol. I (p. 201), viz.: "As the species of palm called the bread-tree (*Zamia caffra*) was found in these parts, we looked for the fruit, which is very scarce, and gathered the seeds. Certain trees produce only male flowers, in a large cone without seeds, and other trees again yield a similar cone, as large as a man's head, with genuine seeds. To the under part of the scales of the male cone are fixed an infinite number of antherae, which burst, and contain a white toughish pollen. On the female cone, seeds, as large as Jordan almonds with the shells on, are contained between the scales, surrounded with a reddish pulp, which is good to eat. The fruit sprang out of the very top of the palm, frequently before there was time for the stem to be formed above the surface of the earth. The seed was supposed to come up best after being planted out, if it was covered with straw, which was to be set on fire, and burnt down close to the ground; or if the seed was previously steeped in warm water."

About December 15 they proceeded as far as the (later) Port Elizabeth division. On p. 89 THUNBERG narrates that "in the plains there were striped horses and asses (*Equus Zebra* and *Quagga*), hartebeests (*Capra dorcas*),¹⁵⁴ koedoes¹⁵⁵ (*Capra strepsiceros*), &c." Among these animals the Quagga, *Equus quagga*, has been exterminated since the days of Thunberg.

III. Return from Caffraria.

They set out on their journey back to Capetown, as already recorded, at the end of December, 1773.

From p. 96 following information may be quoted here: "In the environs of VAN STADE'S river, were the finest woods I had seen in the whole country. Few of the trees, however, were as yet in bloom. The assagay tree (*Curtisia faginea*),¹⁵⁶ of which the Hottentots and Caffres make the shafts of their javelins, grew here in abundance, and began now to develope its diminutive blossoms." We may observe that Van Staaden's River runs through the country of the later Uitenhage division.

¹⁵⁴ Very likely the Cape Hartebeest, whose scientific name was later altered to *Bubalis caama*.

¹⁵⁵ The present scientific name of the Kudu (Dutch, Koedoe) is *Strepsiceros kudu*.

¹⁵⁶ *Curtisia faginea*, Ait. (Cornaceae).

On next page THUNBERG narrates that they rode over the mountains to a farm near Riet-valley in Kamanassie Land. Of the plants growing in this area two species, of the same genus, are brought to our notice (p. 97): "The Hottentots called by the name of *Nenta*, a plant (*Zygophyllum herbaceum repens*),¹⁵⁷ which was said to be poisonous to sheep, as also another, a shrub of the same genus (*Zygophyllum sessilifolium*)."¹⁵⁸

As we have already recorded in our description of the route they followed, THUNBERG and MASSON crossed the mountains in order to have a look at the Great or Central Karoo. On p. 98 we read with regard to this: "The broad tract over which we travelled was Carrow field all over, exhibiting a few bushes, no grass and very little water."

Of the Karoo vegetation only one plant, a succulent, is specially mentioned, viz.:

"*Kon* was a name given by the Hottentots to a shrub that grew here (*Mesembryanthemum emarcidum*)¹⁵⁹ and was famous all over the country. The Hottentots come far and near to fetch this shrub with the root, leaves, and all, which they beat together, and afterwards twist them up like pig-tail tobacco; after which they let the mass ferment, and keep it by them for chewing, especially when they are thirsty. If it be chewed immediately after the fermentation, it intoxicates. . . . The colonists call it *Canna-root*. It is found in the driest fields only. . . ."

They pursued their journey in a western direction and finally arrived at Riet Valley, a company's post in the vicinity of Grootvadersbosch, where they remained a few days to rest themselves, as THUNBERG narrates, "and particularly for the sake of paying another visit to Groote Vader's bosch (or *Grandfather's-wood*) and seeing if the different kinds of trees were come into blossom."

However, THUNBERG was but little more fortunate than the previous times he visited this forest, for he writes (p. 109):

"On the 14th of January accordingly, we went thither, but were not more successful now than we had been before with respect to finding the trees in blossom, much less with fruit on them; some of them, however, were on the point of budding."

From pp. 109-112 a summary is given of the uses of the different sorts of trees "that grew in and round about the wood."

We may confine ourselves to quoting here the various sorts of woods without the particulars THUNBERG gives about their use (cabinetmaking, building, etc.).

¹⁵⁷ *Zygophyllum herbaceum repens* (?). We failed to trace this name.

¹⁵⁸ *Zygophyllum sessilifolium*, L. (Zygophyllaceae).

¹⁵⁹ *Mesembryanthemum emarcidum*, Thunb. = *Mesembr. anatomicum*, Haw.

Black iron wood (*Zwarte yzerhout*, *Olea laurifolia*).¹⁶⁰

Yellow wood (*Geelhout*, *Ilex crocea*).¹⁶¹

Camassie wood (*Camassie-hout*).¹⁶²

Red pear-tree (*Roode peer*).¹⁶³

The Bucku-tree, *Bucku-hout* (*Olea Capensis*).¹⁶⁴

The Red alder (*Roode Else*, *Cunonia capensis*).¹⁶⁵

The Ash (*Essenhout*, *Essenboom*, *Houtniquas* *Essen*, *Ekebergia capensis*).¹⁶⁶ is a large tree.

Of the *Stinkhout*¹⁶⁷ there are two sorts, the white and the brown.

The brown is very beautiful.

The wood of the Olive tree (*Olyve hout*, *Olea Europaea*).¹⁶⁸

Wild Catjeping (*Gardenia Thunbergia*).¹⁶⁹

Witte Essen (or white ash).¹⁷⁰

Zwart-bast (*Royena villosa*).¹⁷¹

Keurhout (*Sophora capensis*).¹⁷²

The Almond tree (*Amandelhout*).¹⁷³

The *Assagay tree* (*Assagay boom*, *Curtisia faginea*).¹⁷⁴

Dorn-hout (*Mimosa nilotica*).¹⁷⁵

¹⁶⁰ Black Ironwood, *Olea laurifolia*, Larn. (Oleaceae.)

¹⁶¹ Thunberg's Yellow wood, *Ilex crocea*, Thunb. = *Elaeodendron croceum*, DC. (Celastraceae) is the "Saffraanhout" (vide footnote 88).

¹⁶² Camassie-wood = *Gonioma Kamassi*, E. Mey (Apocynaceae).

¹⁶³ Red pear-tree = *Scolopia Mundii*, Warb. (Bixaceae).

¹⁶⁴ The Buchu Tree = *Olea capensis*, L. (Oleaceae).

¹⁶⁵ The Red Alder = *Cunonia capensis*, L. (Saxifragaceae).

¹⁶⁶ The Ash or Essenboom, *Ekebergia capensis*, Sparrm. (Meliaceae).

¹⁶⁷ Stinkhout (brown), *Ocotea bullata*, E. Mey. (Lauraceae).

¹⁶⁸ The Cape Olive Tree, *Olea europaea*, Thunb. (non L.!) = *Olea verrucosa*, Link.

¹⁶⁹ *Gardenia Thunbergia*, Thunb. (Rubiaceae).

¹⁷⁰ The White Ash. Not identified.

¹⁷¹ *Royena villosa*, L. (Ebenaceae).

¹⁷² *Sophora capensis*, L. = *Virgilia capensis*, (L.) Lam. (Leguminosae).

¹⁷³ The Almond Tree or Amandelhout. We do not know what tree is meant here. Besides, there is some reason to believe that this tree and the tree which is known to-day under the name of Wild Almond, *Brabejum stellatifolium*, L., are distinct plants. In "Travels" no other common name than "Wild Chestnuts" or "Wilde Castanien" has been applied to the *Brabejum*, the name Wild Almond being of later date.

¹⁷⁴ *Curtisia faginea*, Ait. (Cornaceae).

¹⁷⁵ *Mimosa nilotica*, Thunb. = *Acacia Karoo*, Hayne.

The Waageboom (*Protea grandiflora*)¹⁷⁶ for fuel and making charcoal.

The Kreupelboom (*Protea speciosa*).¹⁷⁷

The Leepelboom.¹⁷⁸

On p. 112 Thunberg informs us, that the largest trees in the African woods, as well in Grootvadersbosch as in other forests, are the following :

“ the Geelhout (*Ilex crocea*), the Bucku (*Olea capensis*), the Tarchonanthus camphoratus, and arboreus,¹⁷⁹ the Roode-else (*Cunonia capensis*) and the Wite-Else. the Stinkhout, the Assagayhout (*Curtisia*), the wild Chesnut (*wilde Castanien*, *brabejum stellatum*),¹⁸⁰ the wild Fig tree (*wilde Vygeboom*, *Ficus capensis*),¹⁸¹ the Keureboom (*Sophora capensis*), the Mimosa nilotica and the Esse-boom (*Ekebergia capensis*). ”

On the hills near Grootvadersbosch THUNBERG observed a wealth of flowering *Ornithogalums*, of which he writes : “ On the hills grew the *Ornithogalum altissimum*,¹⁸² which was now in full blossom, and decorated the plain with its long and crowded spikes of flowers. It was said to be very common every fourth year, and, in the intervening years, hardly to be seen.”

On January 26 they arrived at Hottentots Holland Mountains on which they found several farms. They went down the mountains over its steep slopes, and after having traversed the Flats on the other side, they arrived at Cape Town.

THE CAPE, 1774.

Having returned to Capetown from his second journey into Caffraria, which had lasted $4\frac{1}{2}$ months, he had to acquit himself of the task to send to his patrons in Europe collections of plants and other objects of natural history, made on his journeys into Caffraria and during his sojourn at the Cape, for he writes on p. 117 :

“ Being arrived in town so late in the year [? M.K.] after a journey of five months, I was obliged to use dispatch, in order that I might be able to embrace the opportunity of sending, in the beginning of this year,

¹⁷⁶ *Protea grandiflora*, Thunb.

¹⁷⁷ *Protea speciosa*, L.

¹⁷⁸ The Leepelboom = *Hartogia capensis*, Thunb. (Celastraceae).

¹⁷⁹ *Tarchonanthus camphoratus*, L. ; *Tarchonanthus arboreus*, ? = *Brachylaena* sp. (Compositae).

¹⁸⁰ *Brabejum stellatum*, Thunb. = *B. stellatifolium*, L. (Wild Almond !).

¹⁸¹ *Ficus capensis*, Thunb. (Moraceae).

¹⁸² *Ornithogalum altissimum*, L.f. = *Urginea altissima*, (L.f.) Baker.

1774, to the Botanic Gardens of Amsterdam, Leyden, and Leeuwarden, by the homeward-bound ships sailing for Europe, a considerable quantity of bulbous roots, herbs, seeds and growing plants ; and also, to my other patrons, a great number of bulbous roots, seeds, insects, stuffed birds, and other scarce animals."

Then we come across some varied notes on the Cape of which following may be quoted here :

On p. 119 THUNBERG writes : " Besides a handsome house, built in the Company's garden in town, the governor has also one at *Rondebosch*, and another at *Nieuweland*, both out of the town, to which he may retire at pleasure, and unbend his mind when oppressed with the cares of state. Another such house was now to be built likewise for his accommodations at Baay-fals.

The Company has very fine gardens both at *Rondebosch* and *Nieuweland*, from whence the ships and the hospital are supplied with vegetables."

It may be observed that the governor's house at *Rondebosch* was not the Groote Schuur estate, which is of later date.

On the next page we find recorded that the ships that arrived at the Cape brought the news that Baron VAN PLETTEMBERG had been nominated Governor of the Cape and the Colony, and had been shortly after installed in his office.

From the following quotation (p. 128) it is learned that some alterations made in the Company's garden in 1774, by order of Governor TULBAGH's successor, Baron VAN PLETTEMBERG, by no means met with THUNBERG's approval.

" In the Company's garden there was a very beautiful covered walk, formed of chestnut-trees, which were now very thick and large. It was this year cut down root and branch by order of the governor, for the purpose of making different kinds of furniture of its elegant wood ; and in its stead were planted oaks, which, however, are as little likely to restore the beauty of the garden as those curious animals are to return thither, which the highly respectable Governor Tulbagh had taken pains to collect together there, from the interior parts of Africa ; but which, after his death, were turned out by his successor to become a prey to ravenous beasts."

On the same page THUNBERG calls attention to the wonderful hygroscopic character of a capsule of *Mesembryanthemum*, viz. :

" The fruit of a species of *Mesembryanthemum* was sometimes brought to town as a rarity, and was called *Rosa de Jericho*.¹⁸³ When it is put in

¹⁸³ It is doubtful from which species of *Mesembryanthemum* the capsules, called by the colonists, " Rose of Jericho," originated. We could find no information on the subject.

water, it gradually opens all its seed-vessels, and exactly resembles a sun; and when it becomes dry again, it contracts itself and closes by degrees."

THUNBERG'S JOURNEY TO ROGGEVELD (SEPTEMBER, 1774—DECEMBER, 1774).

On this journey, which lasted exactly three months, quite another corner of the country was visited. This time THUNBERG penetrated as far northwards as the Bokkeveld Mountains between 31 and 32 degrees southern latitude.

On this last expedition THUNBERG was again accompanied by FRANCIS MASSON.

In his report of the journey to Roggeveld only a small number of botanical records are to be found.

Before proceeding to the botanical part, a description of the route THUNBERG and his party followed on this third and last journey far into the interior of the Colony may be of interest.

They left the Cape on September 29, 1774, and first they directed their course to the north-east.

After having crossed Salt River (Zout rivier) near Capetown, and *Mosselbank River* (a branch of Diep River), they arrived at Visschershoek. Then they proceeded to a farm near *Paarl Berg*. From there they travelled in northern direction and arrived near *Riebeek Kasteel* on October 8. Although described by THUNBERG as a very high mountain with steep sides, we read that they managed to climb up to its high summits!

Proceeding on their journey they came to *Piquetberg* (Picket-berg), a mountain still higher than Riebeek Kasteel, as specially stated by THUNBERG.

Travelling always in northern direction, they finally arrived near *Verloren Vlei* (Ferlooren-valley), a rivulet which rises from Piquetberg and empties into Elands Bay. From Verloren Vlei they got to *Langvlei River* (Lange valley), described by THUNBERG as "a river similar to the former, but much less." We may add to this that Langvlei R. rises from the Olifants River Mountains.

Directing their course to the north-east, they arrived at a farm near *Olifants River*. After having crossed this river, they reached the *Bokkeveld Mountains* which ended at that side (not far from the sea-shore according to THUNBERG). On p. 151 THUNBERG narrates that they rode down by the foot of the mountains, "the first and largest projecting point of which was called *Windhoek*, and the other *Maskamma*."

They passed the *Matsikamma* (Maskamma) Mt. and got into the desert, viz., the *Bokkeveld Karoo*. About the tract of land in which they were travelling now, THUNBERG writes on p. 152: "On the 31st (of October) we proceeded through the desert; in which the farther we advanced, the drier it grew. Our journey through the desert lasted three days at least: In the 3rd evening we reached the *Bokke-land mountains*, where we baited all night near a small rivulet of fresh water, called *Dornrivier*." It may be remarked that this small semi-permanent river is not the great Doorn River which rises from the Cold Bokkeveld and unites with Olifants River.

On p. 153 THUNBERG states that all mountains in this district stretched N.N.E. towards the sea, and S.S.W. into the country.

Later on they rode up the Bokkeveld Mountains with two pair of oxen.

About the country they had reached now, we read on p. 155: "We now left a tract of land to the left, nearer to the sea, which is occupied and inhabited by two rich and powerful nations, the little and great *Namaquas*. . . .

. . . . *Bokke-land* or *Goat-land*, which we had now reached, is nothing else than a tolerably high mountain, which is level at the top, and towards the edges of its summit forms a variety of projecting angles, pointing to the sea side. It consists of different strata; the uppermost of which is sand-stone, in many places interlarded with polished round pebbles. The sand-stone is for the most part laminate like slate, and moulders away into pieces by rain."

It appears from the above informations that THUNBERG has passed along the southernmost corner of Namaqualand.

From Bokkeland they saw the *Roggeveld Mountain* to the eastward and, nearer by, the *Hantam Berg* (Hantums mountains) to the northward. Then they rode along Bokkeland to *Hantam*, and about the tract of land they had reached now and in which they penetrated, THUNBERG writes on pp. 163-164: "The Hantum country began with scattered ridges of mountains; farther up the country stood a high mountain, which was more particularly called *Hantummountain*, and had a cut, or open cleft, through which we rode. The mountain was smooth and level at the top, and in height appeared equal to Roggeveld."

Further, we are informed, that after they had got to the end of Bokkeland, the country grew, the farther they travelled, more and more arid ("grew a drier Carrow"). They came across considerable rivers which had still brackish water in them, but in summer are quite dried up.

Directing their course to the south-east, they came after having travelled along the foot of Roggeveld Mountains, to the *Louermoot Roggeveld*, which is so called "not because it lies lower than the other

Roggevels (*Ryefields*), but because it lies farthest from the Cape." (p. 168).

About the climate of this district we read : " The winter is very cold, with frost and snow, for which reason no cattle can be kept here, instead of which they are driven down to the Carrow."

From the Lowermost Roggeveld they proceeded to the *Middle Roggeveld*, which was only divided from the former by means of a few mountainous ridges.

Then they rode along *Visch River* to a farm of a certain JACOBUS THERON, and afterwards they went down into the Bokkeveld Karoo, on which drive the difference of climate sharply manifested itself, for he writes : " While we were on the heights of the mountain, it was intensely cold, but the lower we descended, the calmer and warmer the air became, till in about three hours time we got down to Carrow, when the heat began to grow intolerable." (p. 178.)

They traversed the "dry and barren Carrow" in a south-westerly direction and came to Goudbloem's Kloof, and through some other smaller valleys to the "river of Misfortune (*Ongelucks rivier*)."
Goudbloem's Kloof we failed to find on the topographical map and therefore we did not mark it on the map we have made of the part of South Africa visited by THUNBERG, which one will find reproduced herewith. (Possibly it is the present farm Bloemfontein through which passes the road from Sutherland via Verlaten Kloof to Karoo Poort.)

They crossed *Ongeluks River* (which rises from the Bokkeveld Karoo and unites with Doorn R.).

On December 8 they passed Paardeberg in their way to *Doorn River* (a tributary of Olifants R. and rising from the Cold Bokkeveld).

Then they crossed Doorn River and through a valley (perhaps Karoo Poort) formed by the mountains between Karoo and Cold Bokkeveld they first arrived at a settlement and farm and proceeding on their journey they finally arrived at Verkeerde Valley (at the eastern foot of the Matroosberg).

A few days later they passed through a valley in the mountains to de Vos's estate near *Hex River*. Those mountains are not named, but they are likely to be the Hex River Mts.

On December 17 they reached *Roode Zand*, through Hex River's Kloof.

From Roode Zand they took the usual way through its kloof, which has, as THUNBERG states on p. 183, a considerable eminence that must be crossed. However, the rest of the road runs along the side of the mountain.

About Roode Zand we read that this valley is to be considered as " the

key to the whole country behind the chain of mountains, which runs across the whole point."

Then they took their route past Paardekraal through Koopman's River (a rivulet which is a branch of Great Berg River), and after having crossed Berg River, they proceeded to the Cape.

Some botanical notes about the journey to Roggeveld.

Near Piquetberg :

On p. 139 THUNBERG writes, *i.a.* : " Here grew a shrub called Zandolyve (*Dodonaea angustifolia*),¹⁸⁴ the wood of which was of a hard nature."

On next page we read that " the *Stapelia incarnata*,¹⁸⁵ a very branchy plant without leaves, was found in the vicinity of the mountain, though it was very scarce.

In the same place we find a note about wild animals abounding in this district, viz., that " tygers infested the bushes in these plains." THUNBERG adds to this that the " Cape tyger " is a small animal of about the size of a dog.

Tigers being not represented in this part of the world, the catlike animals THUNBERG referred to, are likely to have been leopards !

Vicinity of Langvlei River :

P. 146. In their way to the Heerenlogement (translated by THUNBERG as " Gentlemen's hotel "), a mountain north of Langvlei and not far from the confluence of Olifants River and Doorn River, THUNBERG found a rare plant for which he had sought for a long time, viz., the *Codon Royeni*,¹⁸⁶ but he did not see more than one single shrub of it.

Bokkeveld Karoo :

On p. 153 THUNBERG writes about this district : " In the Carrow-land grew the most singular Mesembryanthemums, and those in the greatest quantity ; on the other hand but very few Crassulas, Euphorbias and Cotyledons."

Bokkeveld Mountain.

P. 154. When climbing this mountain, THUNBERG discovered a species of *Aloe*, later named by LINNAEUS fil. *A. dichotoma*. THUNBERG

¹⁸⁴ *Dodonaea angustifolia*, Thunb. = *D. Thunbergiana*, Eckl. et Zeyh. (Sapindaceae).

¹⁸⁵ *Stapelia incarnata*, L.f. = *Caralluma incarnata*, (L.f.) N.E. Br. (Asclepiad).

¹⁸⁶ *Codon Royeni*, L. (Hydrophyllaceae).

does not give a description of this quaint Aloe-tree, which is known under the common name of "Kokerboom," but he confines himself to a short note about its stem, which, when it has reached a proper thickness, is hollowed out and used by the Hottentots as a quiver for their arrows.

Lower Bokkeveld.

P. 163. Here they found among other things the very poisonous *Buphane disticha* (L.f.), Herb., a plant of the family of Amaryllidaceae, characterized by an enormous bulb. THUNBERG writes about it as follows: "Poisonous bulbous plants (*Gifbolles*, *Amaryllis disticha*) grow in several places common, with their beautiful clusters of flowers. The root, which is poisonous,¹⁸⁷ is almost as big as one's fist. The Hottentots use it chiefly for poisoning the arrows with which they shoot the smaller kind of game. . . .

. . . . Those bulbs that grow in the shade are thought to possess a stronger poison than those which are exposed to the sun."

Near Hantam Berg.

P. 164. In the vicinity of this mountain THUNBERG made a search for and was so successful to find one of the most curious representatives of the South-African vegetation, viz., the *Hydnora africana*, originally described by him as a kind of fungus (in an article entitled "Beskrifning på en ganska besynnerlig och obekant svamp, *Hydnora africana*, ifrån Goda Hoppets udde i Africa insänd." (Kongl. Vetenskaps Academiens Handlingar, Stockholm, vol. 36, Tab. II. 1775 ("Description of a most peculiar and unknown fungus, *Hydnora africana*, introduced from the Cape of Good Hope in Africa.")).

Hydnora africana, Thunb. is a phanerogamous plant on which the family Hydnoraceae has been founded. It is a root-parasite growing on various species of *Euphorbia*, i.a. on *E. mauritanica*, L. Its fruit, of the size of an egg, ripens underground, and its contents are eaten by the Hottentots and various animals, i.a. jackals, hence the name "Jakhalskost."

About this remarkable plant and its occurrence THUNBERG narrates on p. 164: "In this tract we found the Fungus we had so long sought and wished to see, (*Hydnora Africana*) which without doubt is one of the most extraordinary plants that have been discovered of late years. It always grows under the branches of the shrub, *Euphorbia tirucalli*,¹⁸⁸

¹⁸⁷ THUNBERG must have seen rather small specimens, for the bulbs can grow into the size of a man's head!

¹⁸⁸ This is not *Euphorbia tirucalli*, but probably *E. mauritanica*, L.

and upon its roots. The lower part of it, which is the fruit, is eaten by the Hottentots, Viverræ, Foxes and other animals."

Roggeveld Mountains.

At the end of November they had arrived near the Roggeveld Mts. Of the plants growing wild in this part of the country three species are brought to our notice, viz. :

... "Wild cucumbers is the name given to the Coloquintida (*Cucumis colocynthis*).¹⁸⁹ They were said to be eaten by the Hottentots, and even by the colonists, after being pickled with vinegar, although they taste very bitter. The sheep feed eagerly on them. The *Stapelia articulata repens*,¹⁹⁰ a thick plant without leaves, is eaten by the Hottentots, as also by the colonists, after being pickled in the same manner as cucumbers.

Karré-hout (*Rhus*)¹⁹¹ is a kind of wood which the Hottentots in this part of the country used for making bows." (p. 171.)

At the end of his report of his journey to Roggeveld, THUNBERG writes as follows (p. 184) :

"We took our route to . . . the Cape, where I arrived safe and sound on the 29th of December, with a heart filled with the deepest adoration of that divine Being, which, during my three years' travels in this country, had not only preserved my life and health, but also permitted me to make several useful discoveries in it, to his glory and the future benefit of mankind."

THE CAPE, 1775.

In this part of his itinerary THUNBERG has recorded some recollections of his journeys into the interior of the country. Among other things he gives a most interesting picture of the Karoo, which we may quote here in full :

"Beautiful as the country is to the eastward, fertile, abounding in grass, and well peopled, it is equally dry, barren, uncultivated, and uninhabited to the northward of the Cape, and the farther you proceed the more barren and desertlike it grows.

¹⁸⁹ *Cucumis colocynthis*, Thunb. = *Citrullus vulgaris*, Schrad. (Cucurbit.).

¹⁹⁰ *Stapelia articulata repens* = *Stapelia articulata*, Ait. = *Pectinaria articulata*, Haw. (Asclep.).

¹⁹¹ Karré-hout, *Rhus viminalis*.

After passing three or four ridges of mountains to the northward, you arrive at a country something higher than the Cape shore, but lower than the vallies which lie between the ridges of mountains you have just left behind. This land is called Carrow, or Carrow-field. It seems to go like a broad belt over the whole of this angle of Africa, from the sea-side at the north-western end to the ocean on the south-eastern side. I do not suppose the breadth to be alike all over; but in some places it requires six whole days (or rather long nights) journies. The sun is quite scorching here in the day-time, and the nights are rather cold. The great want of water here for the space of eight months, during which time not a drop of rain falls, together with the aridity of the soil, is the cause that this desert produces nothing but a few herbs and bushes with thick fleshy leaves, such as *Crassulas*, *Mesembryanthemum*, *Cotyledons*, *Cacalias*, *Stapelias*; and that neither man nor beast can live there in summer, as also that no grass can grow, nor any useful grain be cultivated. The soil consists of clay impregnated with iron ochre and a great quantity of sea-salt.

During the time I spent in travelling through different parts of this desert, I did not see a single sparrow, much less any quadruped there, excepting rats in holes in the earth, which probably can subsist a long time without water, and quench their thirst with the succulent and saltish leaves produced by the bushes.

After crossing this extensive and dry desert, which to the eye appears very nearly level, or at most rising a little and slowly to the northward, you encounter a very high mountain, the top of which it would take almost a whole day's journey to reach. This Roggeveld mountain has very little earth on it, exhibiting in most places the smooth and naked rock; neither does it slope off like other mountains, but it is for the most part level, and extends in this manner so far to the northward that the end of it is not known to the colonists. The climate at this height, although several degrees nearer than the Cape to the sun and the Equator, is not only cold, but the cold is so intense that the ground in winter is for a long time covered with snow, hail, and ice."

So far his vivid description of the South African Karoo, a semi-desert which might be turned into fertile land if there were water. . . .

On p. 206 THUNBERG writes that according to his usual practice in the preceding years, he had made it his first care, as soon as he had arrived in Cape Town, to send to Europe, by the returning ships, the collections he had made during his last tour.

Finally it may be mentioned here that THUNBERG found the sides of the streets in the town planted with great numbers of European oaks (*Quercus Robur*), which served both to adorn and shade the houses.

TRAVELS, Vol. IV (1796). Containing *Travels in the Empire of Japan and in the islands of Java and Ceylon, together with The Voyage home.* The third edition.

This volume is illustrated with 4 plates inserted at the back, representing implements and musical instruments of the Japanese.

CAPE OF GOOD HOPE, 1778.

On his homeward voyage from the far East, the ship made the usual stop at the Cape. As to his experiences in the short time of his second and last visit to this corner of the world, recorded on pp. 270-272, the following may be quoted here as the most important :

"A Swedish vessel, which lay at anchor in the road, procured me the pleasure to embrace at this place several of my dear friends, who had come from my beloved native country, and among other novelties, had brought me letters, together with the agreeable news, that I had been appointed Demonstrator of Botany in the University of Upsal, under Professor Linné, who had succeeded his invaluable father."¹⁹²

"I met here with a Mr. PATTERSON,¹⁹³ an Englishman who was come to this place, in order to collect from the interior of Africa, and transmit home to his own country, both the seeds and live roots of such plants, as were scarce and peculiar to these parts. He professed to travel at the expence of certain individuals, and possessed some small knowledge of Botany, but was, in fact, a mere Gardener."

On May 15, 1778, he once more left the Cape in order to sail to Europe. The ship arrived in the roads of *Texel* on October 1, 1778.

As we already know from his letter of October 3, Prof. N. L. BURMAN gave him a most cordial welcome and invited him to take his residence in his house and pass the winter in the midst of his family.

On p. 283 THUNBERG, who greatly appreciated Professor BURMAN's kindness, writes as follows :

"I sailed in company with some of the other officers in a hired boat (from the *Texel*), and arrived in safety at Amsterdam, where my much-respected Patron, Professor BURMANNUS, with the utmost kindness and benevolence, made me an offer of his house and table."¹⁹⁴

¹⁹² Vide P. J. BERGIUS' letter of December 5, 1777. (Carl Peter Thunberg II. Journ. of S. Afr. Botany, Vol. V, Part III, July, 1939, p. 98.)

¹⁹³ Vide first part of this work, footnote 5 (Journal of S. Afr. Botany, Vol. V, Part I, January, 1939, p. 8).

¹⁹⁴ Vide Carl Peter Thunberg I, Journal of S. Afr. Botany, Vol. V, Part I, January, 1939, pp. 6-7.

After having viewed together with BURMAN some collections of natural curiosities which were to be found at Amsterdam, THUNBERG made an excursion into the vicinity of Haarlem, in order to pay his respects to his three worthy patrons, VAN DER POLL, DEUTZ and TEN HOVEN, as likewise to see their country seats.

With regard to the most generous hospitality BURMAN had offered him, we read on p. 286 :

" I could not well accept of Professor BURMANN's very kind invitation to reside in his house, as he and his family were themselves straitened for room, for which reason I hired an apartment of a worthy friend and countryman of mine, ERIC FLOBERG, who was Proprietor of a Silk-stocking Manufactory, and was settled in this city, where all foreigners are at perfect liberty to earn their bread."

After having stayed part of the winter at Amsterdam, finished his engagements with the Dutch East-India Company and received his salary together with the customary gratuity, THUNBERG crossed to England, where he spent the rest of the winter in London.

LONDON, 1778-79.

THUNBERG's visit to London was a great success. He was received by BANKS and SOLANDER and other prominent scientists in a most friendly manner and with the greatest reverence, which is clearly shown by the following quotations :

Pp. 288-89. " Mr. DRYANDER,¹⁹⁵ my friend and quondam fellow-student, had very kindly taken upon himself the charge of providing lodgings for me : my first care therefore was to wait upon this gentleman, at the house of Sir *Joseph Banks*, agreeably to the address he had given me. As soon as I had sent in my name, I was received in the most polite manner by Dr. SOLANDER,¹⁹⁶ who did me the honour to introduce and

¹⁹⁵ J. DRYANDER, born in Sweden in 1748 and deceased in London in 1810, was a botanist and a pupil of Linnaeus senior. He succeeded SOLANDER as librarian of SIR JOSEPH BANKS and of the Linnean Society.

The above data have been extracted from Dr. C. A. BACKER, *Verklarend Woordenboek*, p. 185 (1936).

¹⁹⁶ D. C. SOLANDER was born at Pitea in Norrland, Sweden, in 1736, and died in London in 1782. He was a favourite pupil of LINNAEUS.

In 1760 he settled in England and in 1763 he became an assistant-librarian at the British Museum.

He accompanied BANKS on Capt. COOK's first voyage round the world (1768-71). BANKS appointed him as his librarian in 1771. Two years later he found himself attached again to the British Museum, but now as a conservator of the natural history department.

His name is commemorated in the American genus *Solandra*, Sw. (Solanaceae).

The above biographical notes have been taken from Dr. C. A. BACKER's *Verklarend Woordenboek*, p. 537. (1936).

present me immediately to Sir *Joseph Banks*, in his Cabinet of Natural History.

This Gentleman was not only pleased to receive me with the greatest kindness, in the present instance, but continued, during the whole time of my abode in London, to show me all possible favour and, what was the chief object of my wishes, granted me free and uncontrolled access to his incomparable Collections, made (that appertaining to the vegetable kingdom in particular) from every part of the globe. . . .

. . . . Among the favours, with which Sir *JOSEPH BANKS* overwhelmed me, I consider this a singular proof of his friendship that I was permitted, previous to my departure, to view the Collection of Plants made from the islands in the Pacific Ocean, which were not as yet placed among the other plants, and are not shown indiscriminately to every stranger.

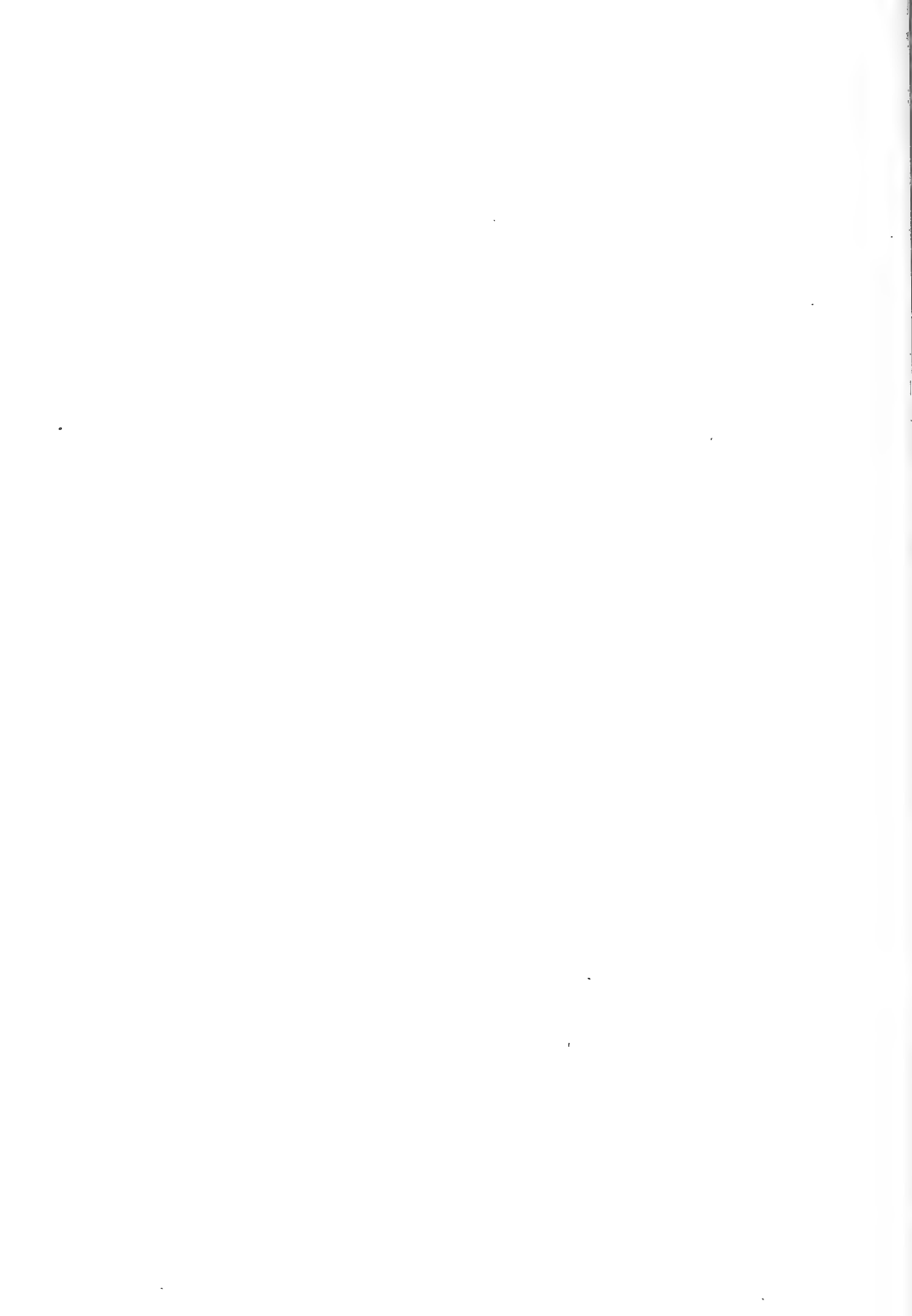
Professor Forster, senior, whom I waited upon one day, received me with much friendship."

At last the day had come that *THUNBERG* should return to his native country.

He left England at the end of January, 1779, and landed at Ystad in Sweden on the 14th of March.

Very soon after his arrival at Stockholm, King Gustav III greatly honoured him by receiving him in special audience, in order to deliver to him a report of his journeys.

(To be continued.)



NOTES ON SOME OF THE SPECIES OF *DROSERA*
OCCURRING IN THE CAPE PENINSULA,
INCLUDING THE NEW SPECIES *D. GLABRIPES*
(HARV.) SALTER AND *D. CURVISCAPA* SALTER.

By PAYMASTER-CAPTAIN T. M. SALTER, R.N. (Ret.).

I. *DROSERA RAMENTACEA* (BURCH.) EX D.C. AND ITS VARIETY *GLABRIPES*
HARV., WHICH IS HERE RAISED TO THE STATUS OF A SPECIES.***Drosera glabripes* Salter.**

I have recently had an opportunity of examining a number of living plants of both the typical form of *Drosera ramentacea* (Burch.) ex D.C. and its so-called variety *glabripes* Harv., which is figured and described in Harvey's Thesaurus, tab. 26. These two plants differ in so many important characters that I have no hesitation in raising the latter to the status of a species under the name *D. glabripes* (Harv.) Salter. The name *glabripes* has long been associated with this plant, but is by no means apt, for the petioles have long soft adpressed hairs on the channelled under side.

Both species flower in December and January and are similar in habit; the elongate stems, which are usually 10—20 cm. long, being densely clothed with old withered deflexed leaves (a character found to a less degree in *D. hilaris* Cham. and Schl.) and the flowers are very much alike, consequently there is a superficial resemblance between them. The leaves and stipules are, however, entirely different.

In *D. glabripes* the leaves are spoon-shaped in outline, the petioles strongly revolute on the margin and only pilose on the lower surface within the channel, and the stipules, which are almost colourless in the living plant, are divided to near the base into 5—7 slender bristles. In *D. ramentacea* the leaves are longer and oar-shaped, the flattened petiole being pilose both above and below, while the stipules are very distinctly tripartite from the middle upwards and chestnut brown in the living state. (Fig. 1.)

These two species are not marsh plants, though they require a considerable amount of moisture. In the Cape Peninsula they grow in rather sheltered situations, usually at the base of rock outcrops and low krantzes on slopes facing south, at an altitude of 1,500 ft. or more, *i.e.* in areas which are frequently enveloped in cloud. The long stems are almost invariably hidden in surrounding vegetation with only the living leaves at the top of the stem visible.

D. ramentacea is rare. A few years ago I found a small colony, confined to a very limited area on Skoorsteen Kop above Hout Bay and one plant was recently found on Swartkop. It had not been observed in the Cape Peninsula since it was found by Ecklon on Table Mountain. *D. glabriipes* is comparatively common and is plentiful on Swartkop and on the south face of Noord Hoek Mountain, and in these areas the plants are rather smaller in all parts than the type (Harvey) "from a grassy bank on the east side of Table Mountain." Both species occur inland.

I have never observed dead insects adhering to the leaves of either species.

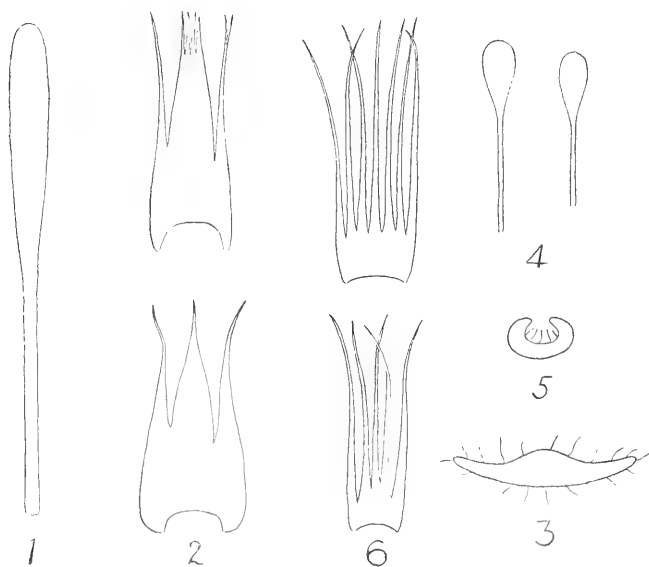


FIG. 1. *Drosera ramentacea* (Burch.) ex D.C. 1. Outline of leaf, natural size. 2. Stipules $\times 4$. 3. Cross section of petiole $\times 10$. *Drosera glabriipes* (Harv.) Salter. 4. Outline of leaves, natural size. 5. Cross section of petiole $\times 10$. 6. Stipules $\times 4$. (Del. T. M. Salter.)

II. *DROSERA CURVISCAPA* SALTER, SP. NOV., WHICH HAS HITHERTO BEEN CONFUSED WITH *D. CUNEIFOLIA* L.F.

Drosera curviscapa Salter. Sp. Nov.

§ Rossolis.

Planta pallidosa viscosa, caule non exserto. *Folia* basalia, sessilia, pence rosulata, cuneiformia, plerumque basin versus attenuata, antice

subtruncata, 1.5—2.5 cm. longa, viridia vel saepius rubicunda, infra adpresso-pubescentia: tentacula rubra, ea marginis anterioris complanata, e basi attenuata, fere 5 mm. longa, glandibus elongatis, cetera breviora, filiformia, glandibus obovoideis, interiora brevissima. *Stipulae* membranaceae pellucidae, trifidae, 5—7 mm. longae, segmento medio

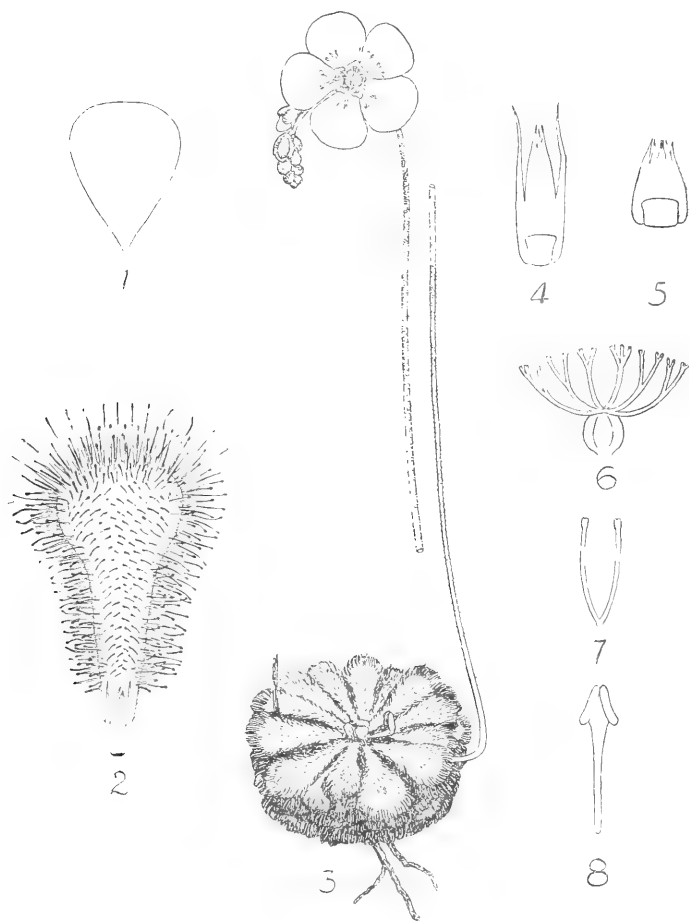


FIG. 2. *Drosera curviscapa* Salter. 1. Petal $\times 2$. 2. Leaf $\times 2$. 3. Plant, natural size. 4. Stipule $\times 4$. 5. Stipule of *D. cuneifolia* L.f. $\times 4$. 6. Gynoecium $\times 5$. 7. Style of *D. cuneifolia* $\times 5$. 8. Stamen $\times 5$. (Salter 8277). Del. T. M. Salter.

lanceolato, apice leviter laciniato, lateralibus linearibus. *Inflorescentia* pilis glanduloso-capitatis brevissimis rubris copiose induta. *Pedunculi* 1—3 (plerumque solitarii), axillares, efoliati, basi breviter horizontales, deinde sursum versus curvati, erecti, plerumque 15—30 cm. alti, rare biramosi, 6—16-flori : racemi scorpioidales : bracteae lineares, parvae. *Calyx* fere 5 mm. longus, lobis obovatis tubo longioribus. *Petala* late cuneato-obovata, rubro-purpurea, 1 cm. longa vel paulum longiora. *Stamina* 4·5 mm. longa, antheris luteis. *Styli* fere ad basin bifidi, ramis iterum bifidis vel trifidis.

Hab. Cape Peninsula : Near Smith's Farm, *Salter* 8277 (*type* in Bolus Herbarium), Modderdam, 7901, Red Hill 7915, Hester's Dam, *Galpin* 12550, Constantiaberg, (*Salter* 8301), Table Mountain, *Esterhuysen* (*Salter* 8021B, 8274) : Caledon Div., Hermanus, *Sutton* 448, *Van Bruyn* 182, *Guthrie*, *Burt Davy* 18489, Landdrost Kop, *Thorne* (S.A. Mus. 51540) : Bredasdorp Div., Koude River (Elim), *Schlechter* 9736 : Swellendam Div., Zuurbraak, Langeberg, *Schlechter* 2113, Goede Hoop Berg, *Thorne* (S.A. Mus. 44540) : Riversdale Div., Garcia's Pass, *Thorne* (S.A. Mus. 38848), Kampsche Berg, *Muir* 3545 ; Knysna, *Bolus* 2255 : Prince Albert Div., Swartberg, *Bolus* 22527 : Humansdorp, *Dix* 151 : Port Elizabeth, *Holland* 3681.

This species has hitherto been confused with or has at least been considered a form of *D. cuneifolia* L.f., which it resembles superficially. It differs from that species in the characters shown in the following table and although herbarium specimens are sometimes not easy to distinguish without dissection, *D. curviscapa* can nearly always be recognised by the curving scape.

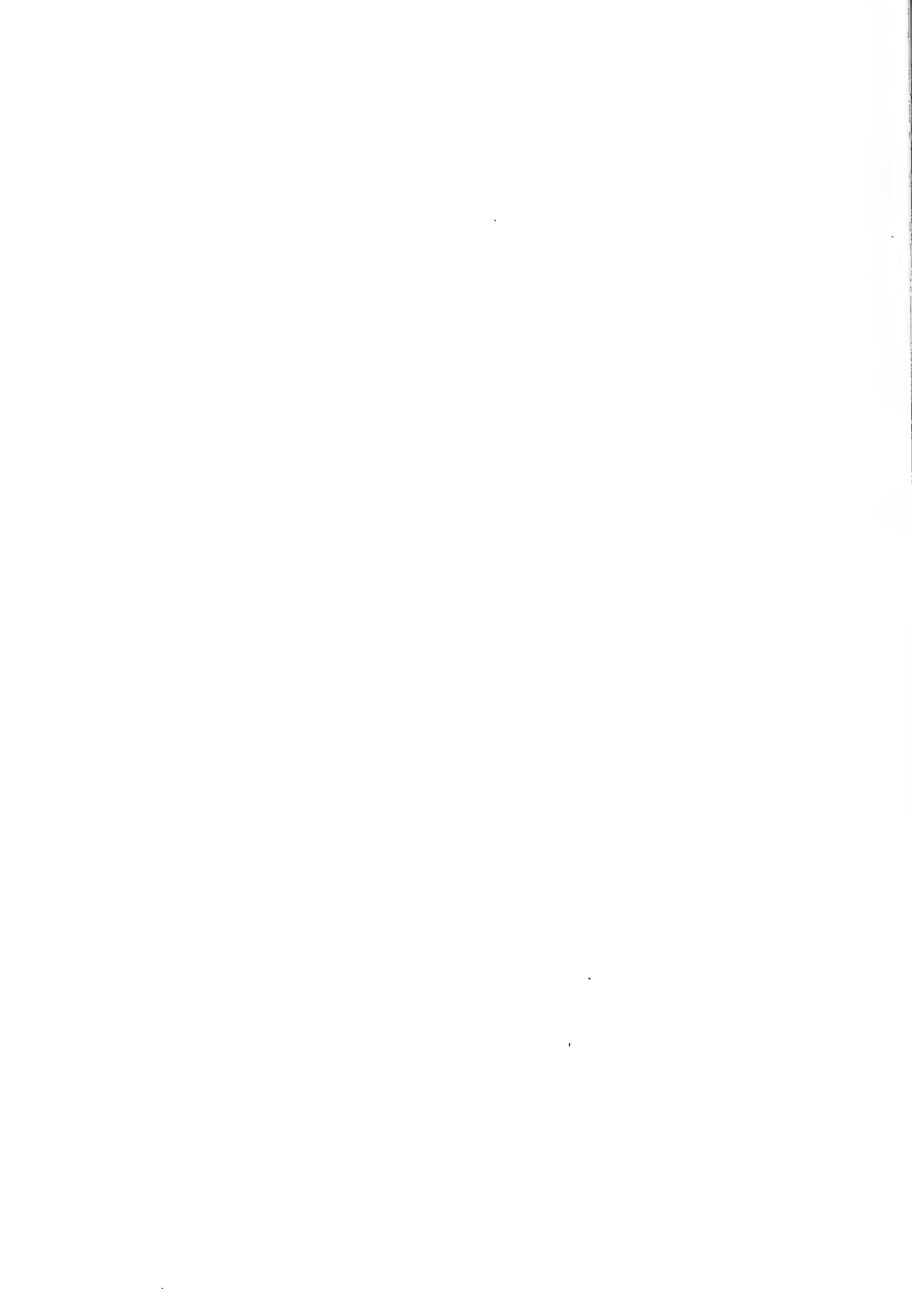
	<i>D. curviscapa.</i>	<i>D. cuneifolia.</i>
<i>Leaves</i>	Adpressed-pubescent beneath, often reddish.	Almost glabrous beneath, green.
<i>Stipules</i>	Colourless, 5—7 mm. long, 3-cleft to about the middle, the median segment lanceolate, slightly lacinate at the apex, the two lateral linear rather longer.	Usually pale rose, 2—4 mm. long, ovate, more or less lacinate at the apex.
<i>Scape</i>	Emerging from the tuft of leaves horizontally, then curving to erect.	Entirely erect.
<i>Styles</i>	Branches bifid or trifid	Branches simple.

Although I have been unable to inspect the actual type specimens of *D. cuneifolia*, which are in the Linnaean collection, the description of them given by Planchon, in Ann. Sc. Nat. 3me Sér. (1848) 195, leaves no doubt which of the two species discussed here is the true *D. cuneifolia*.

Many of the specimens hitherto cited as *D. cuneifolia* are actually the species described here. There are no specimens of *D. cuneifolia* in the collections in South Africa other than those from the higher Cape Peninsula mountains (e.g. Wolley-Dod 263, Constantiaberg, Bolus 22528, Steenberg and several recent collectings from Table Mt. and Constantiaberg, and it is possible that the species is confined to this area.

Like *D. cuneifolia*, *D. curviscapa* is a marsh species and it is often locally abundant in damp peaty places in the Cape Peninsula mountains and on the flats to the south of Smitswinkel, and it extends along the South Coast as far as Port Elizabeth. Very young plants with the rosette of leaves 1.5 cm. in diam., or even less, occasionally flower and produce a filiform scape with two or more much smaller flowers. In old plants the layers of the previous seasons' leaves form a dense spongy basal mass, sometimes 2 cm. in thickness.

[Published February 1940.]



REVIEWS.

MANGHAM, S. "Earth's Green Mantle," with a foreword by Sir ARTHUR W. HILL, pp. 322, plates 41. London: English Univ. Press. 1939. 10s. 6d. net.

There is a prevailing impression with many people that botany consists mainly of the collecting of plants and the application to them of Latin names, often of a tongue-twisting character. This volume will come as a wholesome corrective to this narrow outlook. The alternative title "Plant Science for the General Reader" gives a key to the plan undertaken. Professor Mangham has set out to give an account of all aspects of the study of plants by man, those of direct or indirect usefulness, those of aesthetic character, and those resulting from the desire for knowledge and further, to put this account in a form that will be acceptable to and understandable by the reader without previous special training. The task is a big one, how big may be inferred from a glance at the variety of topics mentioned in the table of contents.

The author has collected together an enormous amount of information gleaned from a great variety of sources. It is not too much to say that no aspect of the study of plants has been overlooked.

Throughout there is emphasis laid in the plant as a working machine,—the author draws many parallels between the plant and a motor car,—and on the fundamental importance of plant life for all living beings. In the treatment of the several sections the historical development of each is sketched out and the still existing gaps in knowledge pointed out. Every page contains information on some aspect and in all cases with the human relation to the fore.

The book forms a very complete outline of the subject and is written in straightforward language. Technical terms used are explained.

The field covered by the author is so wide and is done within so small a space that it is inevitable that any individual reader would advocate rather different proportions, more about some aspects and rather less on others. This is met to some extent by the provision in an appendix of a short list of books for further study.

The volume is rather lavishly illustrated; there are 41 photographic plates and 42 text figures. The great majority of the plates have reproductions of several photographs. These are of high quality but the desire to include a very large number has led to a degree of reduction in many that undoubtedly obscures their effectiveness.

A criticism that will occur to many on reading the book is that it is almost overloaded with information. For the reader without any previous botanical knowledge the sections dealing with the microscope, cells and cell structure, reproduction, genetics, and fossil plants appear rather too full and technical. A lesser amount of detail on such topics and rather more on the ecological aspects might have made such a reader more tempted to pursue the subject further for himself. The growing plant in the field or the garden rather than in the laboratory is where he would start.

This criticism is, however, one of angle of approach, and, in dealing with the large mass of information here brought together, probably no two persons would be in complete agreement.

The book with its many illustrations is not expensive. It is one that can be thoroughly recommended to those wishing for a short but comprehensive exposition of what botany is and what it is trying to do.

A summarised Report upon Work accomplished during the year 1937-8 :
Soil Erosion and Grassland Improvement Grant for Research : Department of Agriculture and Forestry. Johannesburg : University of the Witwatersrand. 1939.

This document of 31 pages is the second report dealing with the experiments on Grassland and its problems during 1937-8 carried out by the Department of Botany of the University of the Witwatersrand. The first was noticed in this Journal last year (*J.S. Afr., Bot. IV, 4, 158*). The report is a condensed summary of work accomplished and in progress. For the most part it is not yet possible to formulate definite results but the data given afford indications that the final conclusions will be of great value. It is to be hoped that the facilities that enable this scheme to be undertaken may be continued.

State of Victoria. Report of the Royal Commission to inquire into the Causes of and Measures taken to prevent the Bush Fire of 1939 and to protect Life and Property, and the Measures to be taken to prevent Bush Fires in Victoria and to protect Life and Property in the event of future Bush Fires. Melbourne : Govt. Printer. 1939. 1s. 3d.

The great forest fire in Victoria in January, 1939, was not only one of the worst in history, but one which resulted in the loss of no less than 71 lives and incalculable loss of property. The Commission that was appointed to enquire into the causes and preventive measures and the steps to be taken to prevent a repetition of such a catastrophe set about its work with commendable promptitude and has now issued its report as a much condensed summary of evidence and findings.

While it is not necessary to give any details, losses from fire are so widespread in this country that the more general conclusions should be noted. The Commission has no doubt that this; and indeed all such fires, are started by man, often unintentionally, very often through negligence. The especially disastrous results of the 1939 fire are related to its following a long drought period, but much more importantly and immediately, are attributable to a number of factors among which the most noteworthy are lack of observance of the unpopular fire laws and complete lack of enforcement of these laws, absence of adequate preventive measures which resulted from divided control, shortage of available funds, and jealousies between different interests.

R.S.A.

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